Manufacturers Record

Shilly-Shallying

Strikes continue to tie up industry, patriotism continues to be subordinated to self interest, and defense work is crippled, while the great mass of the free American people remain confused.

If the only alternatives that our government has to offer are mediation gestures that are too often ineffective, and threats to take over plants that do not "knuckle down" to the demands of self seekers, then it is time for Congress to act and declare strikes illegal during the emergency.

Our government is not a government of labor, of the farmer, of the manufacturer and mine operator or of the banker. It is a government of the American People. Each one of us has a stake in liberty that must be protected.

It is time that our government express our wishes. The country is fed up with shilly-shallying.

JUNE 1941

"MECHANIZED"

ON A 70,000 MILE FRONT

OUR COMPANIES answer the defense call with a resounding "Ready!". Along the 70,000 miles of electric transmission and distribution lines in our service areas in 10 states—"Preparedness" is the word, and has been for years.

Electric power and man power are on the job—mechanized forces, modern equipment. Four thousand trucks and cars, for example—on the move night or day, storm or shine — extending lines, answering the calls of factory, farm and home, or battling the wars of nature.

For years our companies have built against the calls for more power. In every year since 1935, new generating units have been going into service. Ten more of these high-efficiency electrical giants on the line in these years. More on the way.

Completion of present construction will mean our companies have put in action over 3,300,000 horsepower . . . for the service of our communities and the nation.

THE COMMONWEALTH & SOUTHERN CORPORATION

ALABAMA - FLORIDA - GEORGIA - ILLINOIS - INDIANA - MICHIGAN - MISSISSIPPI - OHIO - PENNSYLVANIA - SO. CAROLINA

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MANUFACTURERS RECORD

Devoted to the Upbuilding of the Nation Through the Development of the South and Southwest as the Nation's Greatest Material Asset

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LET'S MAKE A BLUEPRINT

FOR YOUR FUTURE HOME

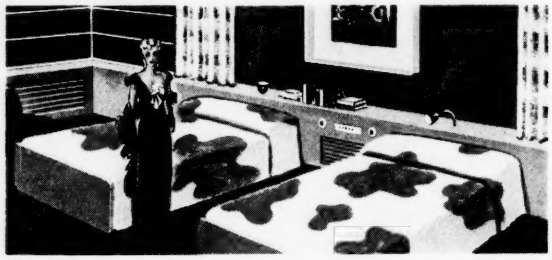
IN

ALUMINIZED AMERICA

You can't move in now, for many of the things in the homes of Aluminized America depend upon aluminum . . . and right now aluminum's job is to defend your home, not change it.

But the aluminum industry is making spectacular increases in mills, dams, power plants and ships which we hope will eventually meet the requirements of National Defense and leave plenty of this light, strong, economical material for other purposes. Soon the company's production capacity will be almost two and a half times what it was in 1939—the biggest peace time year in the company's history. When the emergency is over, America will have so much aluminum at such favorable prices that you will be using it in ways hardly even dreamed of today.

FOOD. Sterilizing lamps with aluminum reflectors built into refrigerators will cut food spoilage . . . Fruit and many other foods wrapped in aluminum foil will remain firmer and juicier . . . Kitchen ranges of colored aluminum will not chip . . . Aluminum surfaces of oven linings and reflectors under burners will get greater efficiency from fuels.



DECORATION. Hard-to-move upholstered furniture may be made lighter with aluminum frames . . . So may beds and other heavy pieces . . . Development of beautiful colors in aluminum may adapt it to use in panels or entire walls.

HEAT. Burned furnace gases may be sent through aluminum pipes along basement ceilings to recover 300 to 400 degrees of heat now going up chimneys . . . Radiators of aluminum may be smaller but discharge heat faster . . . Ceilings of perforated tinted aluminum may circulate hot (or cold) air evenly over an entire room . . . Aluminum priming paint will tend to prevent the moisture in air-conditioned homes from making wood swell and paint crack . . . Awnings, being aluminum, will not need repairing, nor be a fire hazard.

LIGHT. Low-cost light from tinted fluorescent tubes with aluminum reflectors will enable you to use light lavishly. These tubes may be mounted around windows so that light always comes from the same source, night or day . . . The permanently high reflectivity of aluminum will make it economical to use these tubes or regular bulbs in hidden coves, behind valances, in recesses.

Call on Aluminum's Research and Development Men

If you are working with any problem for the future in which aluminum may help, our engineers will be glad to work with you in finding an answer among aluminum's many economic advantages, among which are:

Light Weight
High Resistance to Corrosion
High Electrical Conductivity
High Conductivity for Heat
High Reflectivity for Light and Radiant Heat
Workability
Non-Magnetic
Non-toxic
Strength (in alloys)
Non-sparking
Appearance
High Scrap and Re-use Value

ALCOA

ALUMINUM COMPANY OF AMERICA

2109 GULF BUILDING • PITTSBURGH, PENNSYLVANIA

TO PRESERVE DEMOCRACY

It is no longer a question of what those who love peace would prefer to do. Americans always have wanted to live at peace with the rest of the world. The immediate problem we face is to do quickly what must be done to preserve our liberties. The issue is drawn. The course which the people of the United States will follow is clear.

The world is in torment while peace loving nations are being over-run, and their entire productive effort is made to serve the purpose of ruthlessness that would enslave others. World empire and domination by Germany is Hitler's aim. His march through Europe has been as that of a juggernaut, and his strength has been increased by the resources and production of captured nations.

Only in one place has he been stopped. He has been unable to conquer England, and with our help he never will. That is a very satisfying thought. Can we make it good? There must be no doubt about it.

The declaration by the Commander-in-Chief of an "unlimited national emergency" is virtually a call to the colors. It supplies the reason for a unified purpose and a unified effort that must be exerted to the utmost.

Much has been written about America's actual and potential might. Vast as it is, and the full tally has never been set down, it has never before been exerted as it must be. The spirit of a free people, appreciating at last that their freedom is in danger, will disregard affairs that are trivial in comparison with the all-out effort now needed in a common cause. Complacency must give way to awareness of what will happen if work is delayed. Disputes must be settled by adjustment agencies and the energy of every individual placed at the disposal of his government.

That is not an alarming picture. Sacrifices for a great purpose are ennobling. Out of it will come a stronger nation of individuals conscious of the value of the freedom they possess—freedom found only in democracies and so precious by comparison with the life of those in slavery that everything in the way of effort and sacrifice is not too much to pay for its preservation.

Dallas Airplane Plant Starts Production

Nation's First Blackout Airplane Plant has World's Largest Industrial Room

by

J. GORDON TURNBULL

Consulting Engineer on Construction of Dallas Plant of North American Aviation, Inc.

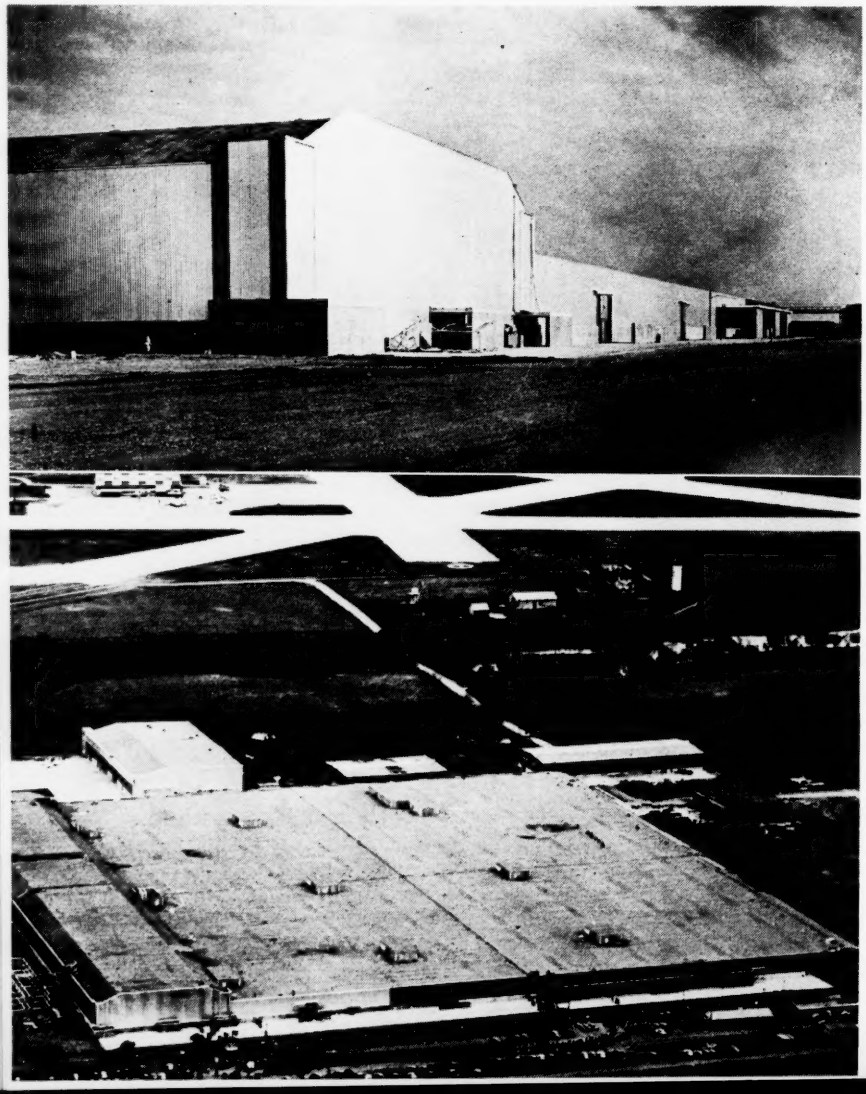
THE first blackout airplane manufacturing plant in this country has just been completed in a cotton patch near Grand Prairie, Texas, half-way between Dallas and Ft. Worth.

Housing the Texas unit of North American Aviation, Inc., it contains the largest industrial room in the world, 900 x 950 feet, with 855,000 sq. ft. of floor space. Six auxiliary buildings bring the total floor space of the unit to 1,024,000 sq. ft. The entire plant is windowless, air conditioned, and artificially illuminated with the latest type fluorescent lighting, providing an absolute blackout manufacturing unit. Despite the wettest winter season in years, remarkable progress was made in construction.

The modern plants being erected in the South are attracting wide attention because of the employment of the latest developments in modern labor saving equipment, as well as the size of the investment represented in the huge buildings being erected.

We have in the accompanying article a description of a number of unusual features which the reader will discern. The spinning room, as described here, has a ground floor area of 400,000 sq. ft., or more than 9 acres.

Another article in this issue describes an airplane plant at Dallas, Texas, which has in the area of one room 855,000 sq. ft. At Nashville the plant of Voltee Aircraft Inc. has a floor space of more than 800,000 sq. ft. or about 18½ acres.



North American's new production unit is now busily engaged turning out training planes for National Defense. At top is shown part of the windowless and completely air conditioned building while below is an air view of the entire plant adjacent to Hensley Field.

North American Aviation awarded the general contract to James Stewart & Co., Inc. of New York. The plant is located near Hensley Field Airport, owned by the city of Dallas but leased by the War Department. Finished planes will be delivered to the Army over a connecting runway.

Construction of Main Assembly Building

The main assembly building is probably the largest room in the world. It consists of nineteen 50 ft. bays in a north south direction, with a 150 ft. bay

for final plane assembly extending east-west across the north side of the building. This bay is 25 feet high from floor to trusses, and the remainder of the building rises to 16 feet of clear height. Main roof trusses run north and south, and are carried on 8 and 10-inch wide flange-rolled columns resting on individual spread footings up to 6 feet square and 6 feet deep. Trusses are light, for they support a light roof. Top chords in general consist of two 4 x 4 inch angles, bottom chords of two 3 x 3 inch angles. Transverse trusses are similar in design. Steel work is divided into four quadrants by expansion joints midway in both directions.

Reinforced Concrete Floor Construction

The floor system in all buildings is five-inch reinforced concrete on a four-inch gravel cushion, with expansion joints 100 feet apart. Concrete flooring in the manufacturing and shop areas is not surfaced. Cement block partitions separate the south end of the main building processing rooms from the main room. Engineering and departmental offices will be located on a 150 x 300-foot mezzanine section. Washrooms are also in mezzanine locations, leaving the entire floor areas free for manufacturing purposes.

Unusual Walls and Roofs

Wall and roof construction is rather unusual. Lower walls consist of a 10-inch thickness of concrete 5½ feet high. Above this, spanning clear to the roof line, the walls are of Robertson cellar metal siding, the cells or corrugations running vertically. This material comes in cellular sheets, 24 inches wide, which interlock at the sides. The sheets can be cut with a power rip saw. Backing up the metal exterior is a one-inch rigid celotex insulation, carrying a metal liner plate exposed to the interior. The roof is cellular metal deck, insulated with 2½ inches of Celotex upon which is placed a composition built-up roofing.

Light steel purlins spanning the distance between the trusses support the roof deck.

Plane Storage Building

To the east of the main plant is a plane storage building, 150 x 300 feet, with 300-foot trusses providing an interior free of columns. Sliding doors along the north side of this building disappear into end pockets to allow a 300-foot clear opening. South of the plane storage are a 100 x 150 foot drop hammer shop and a 100 x 250 foot foundry. South of the main plant are a paint storage building, 100 x 100 feet, a power house, an Imhoff tank sewage treatment plant and a million-gallon concrete reservoir. Water is supplied by two wells. Facing north, at the northeast corner of the main building, is the plant office, 52 x 150 feet.

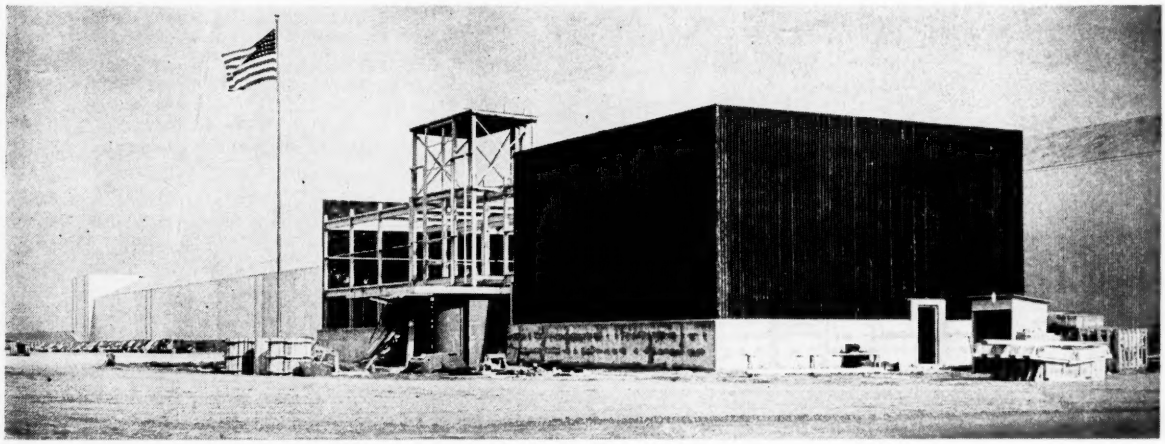
Areas around the buildings on the east are paved with concrete. Parking spaces on the north side for office employees and executives, and a big 525 x 950 foot parking lot to the west for plant workmen, have oiled surfaces. The City of Dallas constructed a connecting runway between the plant and Hensley Field's existing runways.

Structural Design to Minimize Effect of Bombing

This type of building construction is not bombproof, but the engineers believe that the design would minimize the effect of bombing, for there is no masonry to shatter. As a precaution, the main doors to the west, used by employees entering and leaving the plant, are pro-

Above—Rows of drill presses in the machine shop stood ready for production when the new defense units was recently completed.

Below—The office building of the new factory, like all the other units is windowless and completely air conditioned.



tected by ten-inch, concrete baffles nine feet high. This construction feature would prevent bomb splinters from outside explosions from entering the doorways.

The plant faces Jefferson Road, formerly the main highway between Dallas and Fort Worth, and the main line of the Texas & Pacific Railroad. A railroad spur, circling the site to the west are running back along the south side of the main building, where there is a long unloading platform, has been built by the railroad. The contractors extended the rail line around to the east as a temporary construction facility.

Construction started November 13, 1940. Despite 34 days of rain, totaling 14.2 inches, 103 days later the main building was erected and enclosed, and work on the smaller buildings was well advanced. Equipment for the manufacturing processes started to roll in by mid-February, and on April 7, the plant was in partial operation.

From the very start, the contractors battled deep mud. Delivery of material and building supplies was not impaired, because of the temporary railroad spur, but distribution about the job became a problem.

Fabrication of the 5,000 tons of structural steel was sublet to the Muskogee Iron Works, Muskogee, Okla., and the erection to John Beasley of Muskogee. Trusses were assembled near the railroad spur, and were dragged through the mud by tractors.

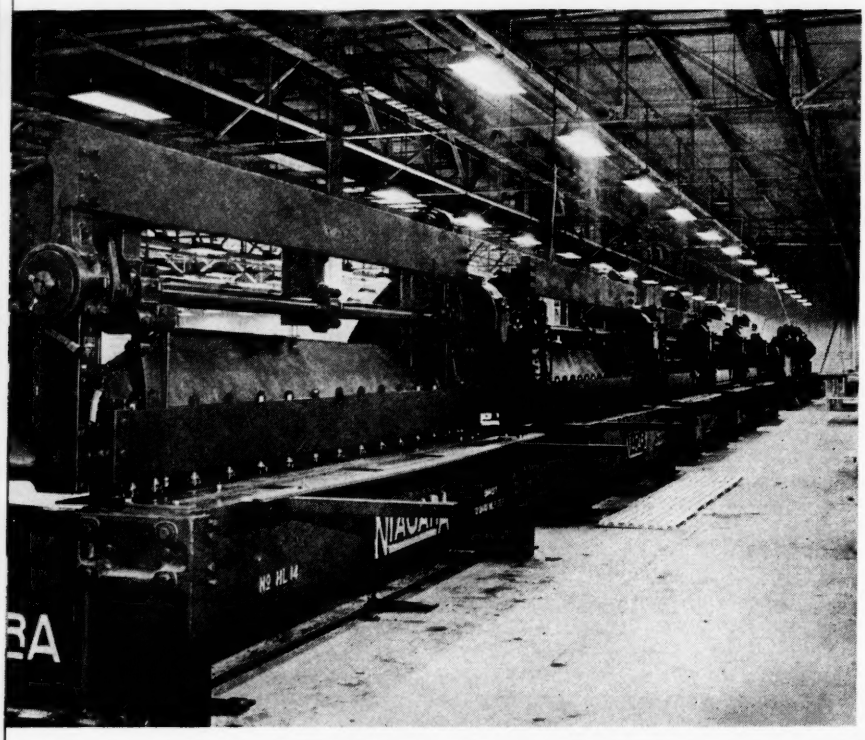
The Stewart contract included all construction except furnishing and installation of plumbing, air conditioning, and electrical work, which was done under separate contract by George Freyn Brothers, Indianapolis. Finding it impossible to obtain all regular equipment needed, Freyn built air-conditioning cabinets, vent ducts, heating units, and even metal furniture and parts racks in the best-equipped shop ever found on a construction job.

Diesel Generating Units for Emergency Electric Use

Electrical service for the North American plant is obtained from the Dallas Power and Light Co., over its 60 kv line from the Mountain Creek power house. A 7,500 kva substation consisting of three 2,500 kva Westinghouse transformers converts this power to 2,300 volts for distribution throughout the plant. From the substation, 2,300 volt feeders are run underground to the main switchboard. In addition to the service from the Dallas Power and Light Co., three 1,000 Kilowatt General Motors Diesel generating units, which will operate in parallel with the public service company's incoming line, are available for emergency use. Both services feed to a common switchboard in the power house. In the power house are four 650-horsepower, 2,300-volt motors operating Worthington compressors, and three 300-horsepower General Electric motors operating Chicago pneumatic air compressors.

From the main switchboard, feeders are extended underground to the transformer banks in the main manufacturing building. These transformer banks are located in penthouses above the truss line. Power is converted at the transformer banks from 2,300 volts to 440 volts. All transformers are of the non-inflammable, oil-cooled type manufactured by Westinghouse. At each transformer location there is also provided a distributing switchboard from which a 440-volt Frank Adams Co. "bus-duct" is carried throughout the building for distribution of power. Take-offs, or taps, are provided in the bus ducts every two feet for connections to machines or other power requirements. In addition, bus ducts also provide taps for more than 50 lighting transformers, ranging in size from 7½ kva to 50 kva. These transformers convert the 440 volts to 208-120 volts for lighting current.

This battery of power brakes in the sheet metal preparation department was ready for production when trained men moved into the plant immediately upon its completion.



7,000 Fluorescent Lighting Units Required

Fluorescent lighting is used throughout the building. Seven thousand units suspended 12 feet above the floor, provide an average of 26 foot candles on the working plane. Each unit consists of three reactors, three condensers and three 40-watt daylight type fluorescent 48-inch tubes, all mounted in a porcelain reflector. The lighting units were manufactured in Dallas by the Beckett Electric Co. Outside areas are illuminated by Westinghouse floodlights controlled from a central area.

An extensive fire alarm, signal, and intercommunicating system has been provided to enable complete supervision over all watchmen. Telegraph and telephone facilities are provided throughout the plant. The electrical contract required 49 miles of conduit, 152 miles of wire, 16,250 feet of bus duct, 120 tons of transformers, 18 tons of copper bus, and 90,000 feet of messenger wire for support of the conduit system. Two hundred men were employed on the project.

Extensive Air Conditioning System Employed

The air-conditioning system is designed to maintain optimum working conditions for the personnel during the summer months. Chilled water is circulated during the summer, and heat is provided during the winter months by circulation of warm water through the same battery of coils. The following specifications were followed:

For summer operation: Cooling of outside air of 100° Fah. dry bulb and 78° Fah. wet bulb to produce an inside air temperature of 84° Fah. dry bulb, relative humidity not exceeding 45%.

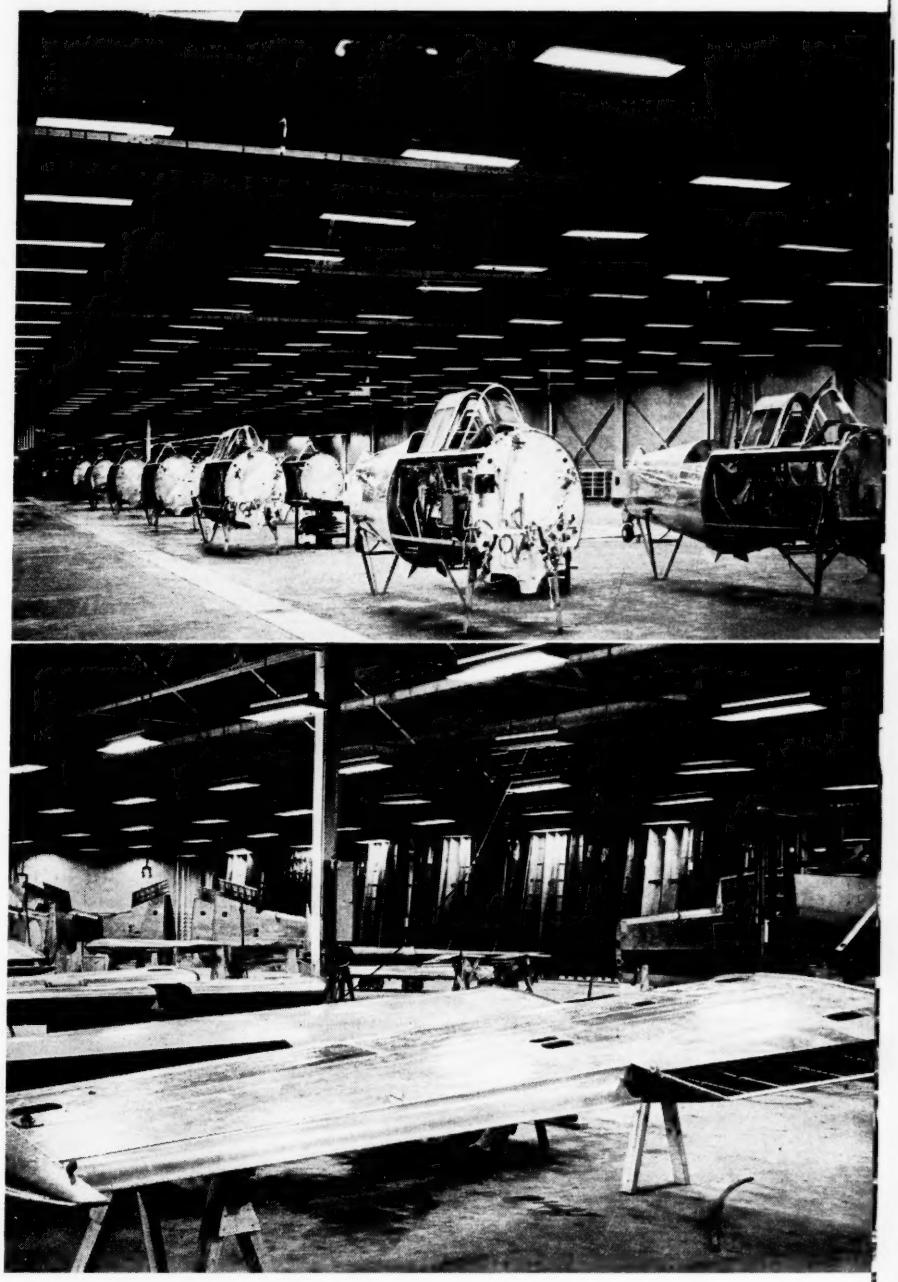
While maintaining these conditions not less than 160,000 cubic feet of air per minute will be infiltrated from the outside.

Sensible and latent heat load were computed on the basis of 6,000 people occupying the conditioned area at a given time, plus a fluorescent lighting load of 1,000 kilowatts and a load of approximately 3,000 kilowatts of machinery and tools in operation. Design of the heating system output was based on shutdown operation, in which no set heat gain could be realized from personnel or connected power. In general, the air conditioning system comprises: (a) four 650 ton Worthington Pump and Machinery centrifugal compressors to produce chilled water at approximately 45° Fah., circulated to return type cooling coils in each of the nine penthouses on the roof of the main factory building; (b) nine penthouses containing dual systems of American Filter Co. mechanical, oil-immersed type filters, Frigidaire return type cooling coils, and American Blower Co. fan units.

The temperature and humidity are controlled by Johnson Service Co.'s equipment. A Lilie-Hoffman mechanical forced draft cooling tower is located over a million-gallon reservoir situated at the south end of the main factory building. Three 650-ton Worthington centrifugal compressors are connected directly to Westinghouse synchronous motors, and the fourth to a Westinghouse induction motor for regulation. The forced draft mechanical cooling tower was designed to handle 10,000 gallons per minute from an entering temperature of 85° Fah. at an atmospheric condition equivalent to 78° Fah. wet bulb, and the lower temperatures according to a lower wet bulb reading. The loss by evaporation passing through the cooling tower is not to exceed 1% of the total quantity of water circulated for each reduction of 10° in water temperature.

Construction of the tower is such that it will withstand all stresses produced by winds or other loads equivalent to a wind velocity of 100 miles per hour, or a pressure of 30 pounds per square foot. The noise level may not exceed 85 decibels beyond a radius of fifty feet from the tower.

Supply air is taken from the exhaust side of each fan in each of the penthouses and distributed throughout the factory in ducts suspended above the bottom chords of the trusses. Return air is taken from the factory through grill work at the bottom of each penthouse. Louvres under Johnson Service Co.'s automatic control are provided in each penthouse for infiltration of outside air. Each of the American Blower Co.'s fans has a maximum output of 62,500 cubic feet of air per minute against an estimated resistance pressure of one inch of water.



Even before the formal dedication work was well under way as may be seen from the above photos. Top—a view of the general assembly line and (below) wing assembly department.

Railroad Freight Car Orders Highest in 16 Years

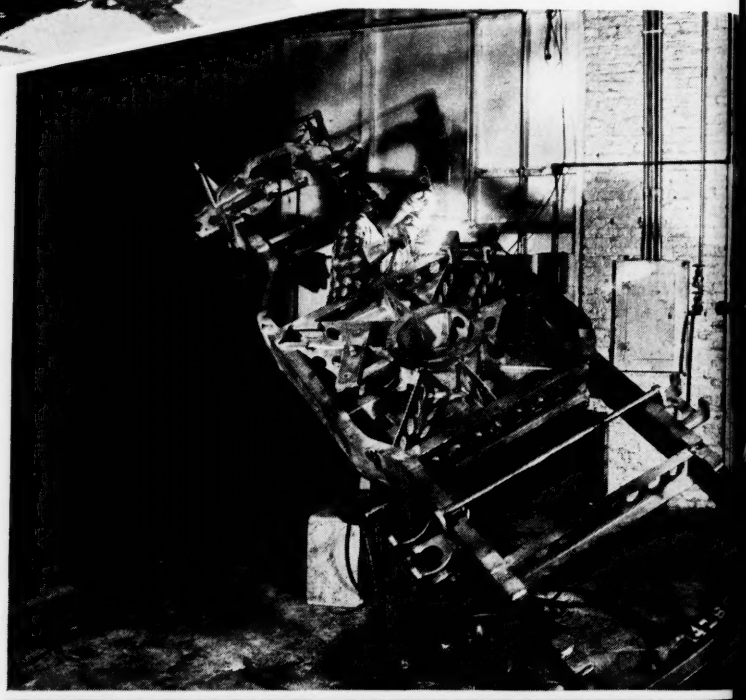
More new freight cars are on order now than at any time in the past 16 years, the Association of American Railroads recently announced.

On May 1, 1941, Class I railroads had 56,502 new freight cars on order. Since then, however, preliminary reports indicate that orders are to be placed in the immediate future for 16,225 additional freight cars. All of these new cars are expected to be completed and placed in service this year.

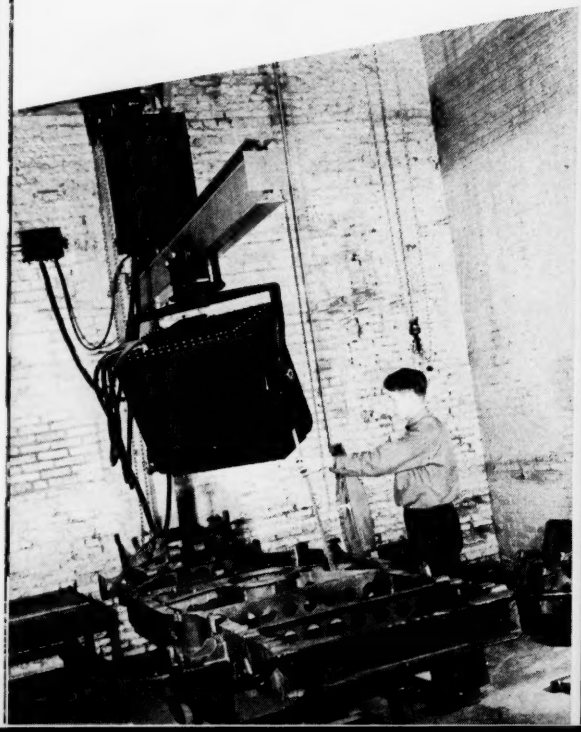
Taking into consideration the 24,284 new freight cars which were placed in service in the first four months, this means that approximately 97,000 new cars will have been completed and installed in service within 1941.

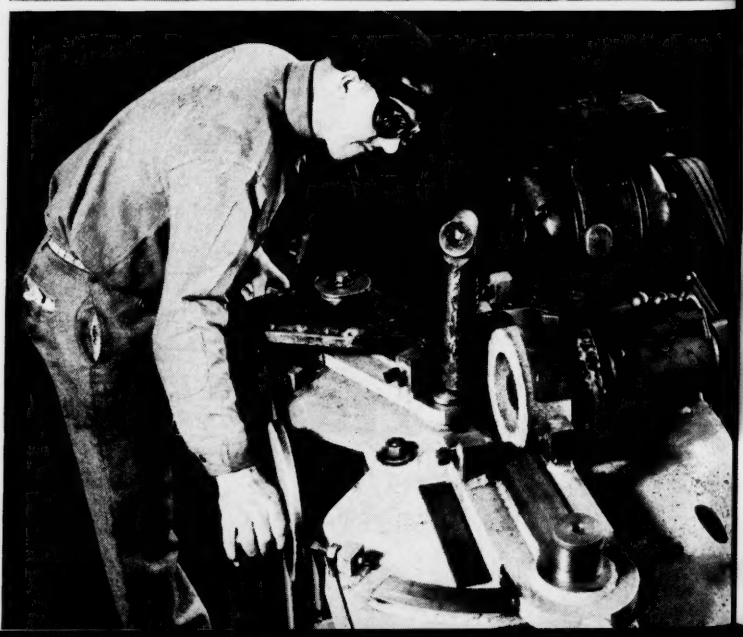
In addition, the railroads also will provide for a net increase of 120,000 cars to the supply for the anticipated rise in traffic in 1942.

Welding and As
Anti-Aircraf G



Above—Lineup of carriages with 37 mm. anti-aircraft guns in firing position when the just completed units were turned over to the War Department by the Bartlett Hayward Division of Koppers Company in Baltimore, Md. Right—Here is position welding where each seam is positioned for down hand welding. Below—Taking X-ray pictures to check for possible imperfect welding in chassis of gun carriage. Lower right—Grinding radius on an axle a.m for gun carriages.





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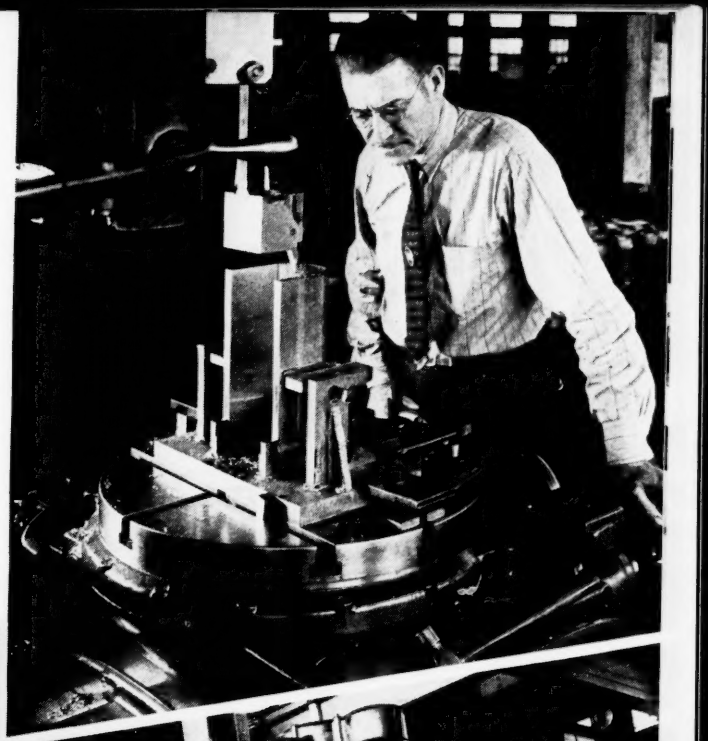
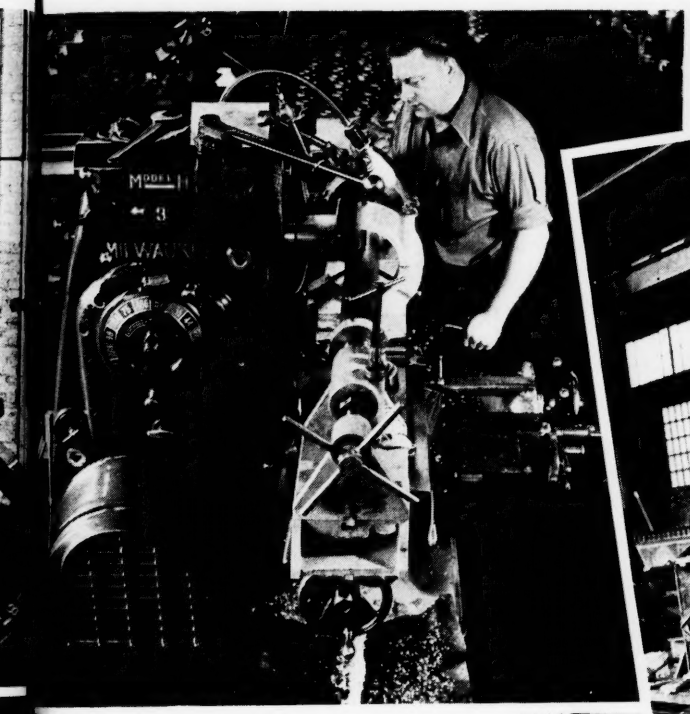
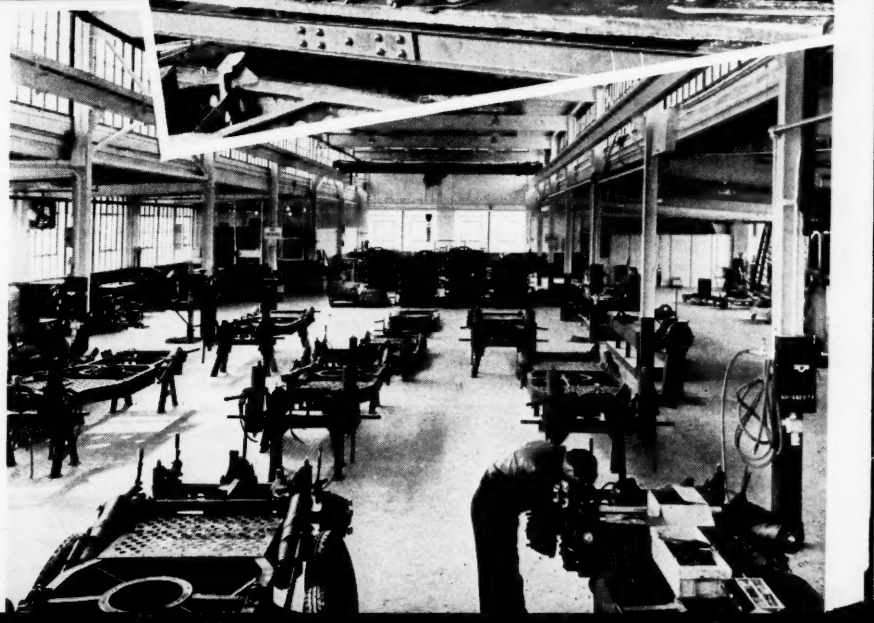
Assembling Gun Mounts







Above—Milling operation on one of the counterpoise cylinders used on each gun carriage. Upper right—The extreme accuracy with which parts of the gun carriage must be made is exemplified by this vertical shaper operation in producing a gear case. Fixtures were especially created by Bartlett Hayward. Right center—On this radial drill press with fixtures especially designed and manufactured by Bartlett Hayward for this purpose, the gun carriage chassis can be drilled without removal from the press during top, bottom, or side operations. Lower right—The starting end of the assembly line with the painting room in extreme right corner.

America's Largest Viscose Rayon Unit

THESE are busy days at the giant Front Royal, Virginia, plant of American Viscose Corporation. For the production of rayon staple fiber is now getting under way, and at the same time, production of continuous filament yarns is being stepped up to meet increasing demands.

Since completion of the plant's buildings, hundreds of technicians and engineers, welders, machinists, and lead burners have been installing equipment. Much of this equipment has only recently been improved to its present state of productiveness. As a result, Front Royal, as it stands today, is the largest and one of the most modern viscose rayon producing plants in America.

Annual Capacity to be 50 Million Pounds

Present plans call for the gradual addition of new equipment during this year, and it is expected that the plant will reach its full capacity, 50 million pounds, in 1942. Of this capacity, approximately half will be devoted to Fibro, rayon staple fiber, and the other half to the viscose yarns, "Tenasco" and "Rayflex."

Front Royal Site Advantageous

The Front Royal site is said to meet all requirements for successful rayon production. It is centrally located with respect to raw material sources and markets. Transportation facilities are more than adequate. The Shenandoah River provides a plentiful source of pure water. Competent labor abounds in the territory. The plant occupies a 425-acre tract of level farm land, of which buildings cover 25 acres. Most of the buildings are of one-story, red-brick construction, attractively lined with buff and white glazed brick. There are none of the conventional skylights, provision having been made for efficient artificial lighting and air conditioning throughout. Much of the lighting, especially where high intensities are required, is of the fluorescent type. A large and modern system of air conditioning is provided for the comfort of employees and to control the quality of products.

Water Supply

Since water is perhaps the number one raw material used in making rayon, it is interesting to glance at the facilities provided here to make available an adequate supply of this important commodity. Large pumps, capable of supplying water at the rate of 6,000 gallons a minute against a head of 45 feet, are installed in a pump house at the river's edge. This volume of water enters the plant via a half-mile line of 36-in. pipe. Here it is filtered, treated, purified, and finally stored in a 3½-million gallon spray pond. From this reservoir it is drawn, as needed, for use as boiler water, water for washing the products, or water for use in the various chemical operations.

Largest Power Plant for Rayon

One of the most important buildings is the modern power plant, the largest power house in the world devoted solely to the manufacture of rayon yarn, and one of the largest industrial power plants in the South. Its five turbine-generators are capable of producing a constant supply of 24,000 kilowatts, enough to meet the residential needs of a city the size of Pittsburgh. Built in successive graduations of one, three, and five stories, the plant is modern in every respect, and includes allowances for future expansion. Present boiler capacity includes three 225,000-lb. steam generating units. Every boiler is served by two pulverizing mills, each capable of pulverizing coal at the rate of 12,000 lb. per hour. Each boiler is equipped with special fly-ash precipitators which are so effective that the plant may virtually be called "smokeless." Guaranteed boiler efficiency is 86 per cent.

Boiler feed water is analyzed daily to determine concentrations of calcium and magnesium. By keeping these concentrations below the scale forming point, the scale problem has been entirely eliminated. Contributing to the efficiency of the system, practically all waste heat from the turbines and preheaters is utilized in the form of low-pressure steam for drying operations and hot water for washing and bleaching.

Modern Viscose Machinery

All machinery used in the production of the viscose solution has been designed with a view toward maximum efficiency, minimum handling costs, and constant solution quality. The steeping presses are so arranged that the mercerized pulp can be discharged directly into pfleiderers on a lower level. After the shredding operation, the crumb is dumped into large portable ageing tanks, in which it is stored under carefully controlled conditions of time and temperature. Special facilities have been provided to mix the mercerized crumb with an accurately determined amount of carbon di-sulphide, forming xanthate, and then dissolve the xanthate in dilute caustic soda-solution. These operations are carried out with minimum handling of the material, in many cases under fully automatic control. The resulting viscose solution is then forced through modern filters and deaeriators, which prepare it for spinning.

400,000 Sq. Ft. Spinning Room

Perhaps the most impressive structure in the entire plant is the spinning room which covers in one floor a space equal to two average city blocks, or over nine acres. Purified viscose solution enters this room, and emerges either as yarn, or as finished, baled Fibro. In one end of this room, 100 large spinning machines are already installed and room has been allotted for future addition of an equal number. They are constructed largely with lead, somewhat heavier than conventional machines, to reduce vibration and lower maintenance expense. To maintain

Front Royal Plant of American Viscose Starts Production of Staple Fiber

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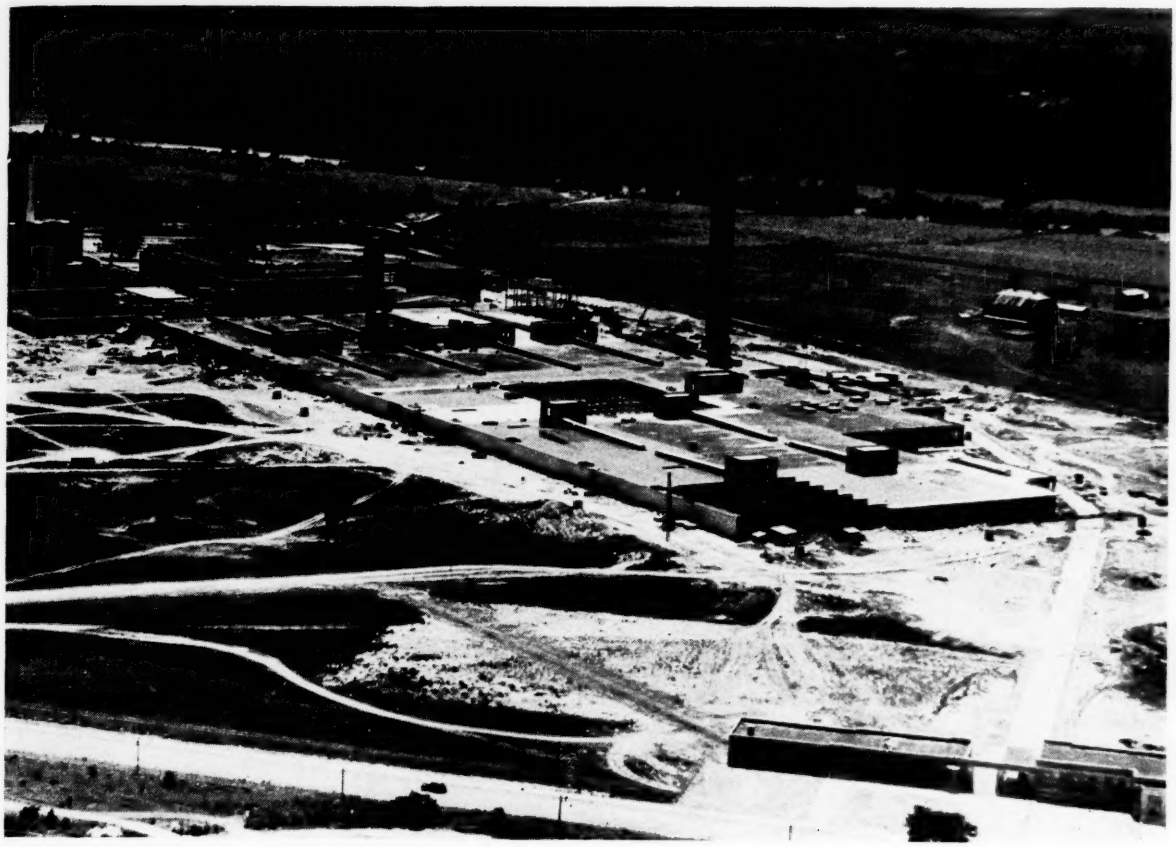
Employees to number 2,000



The Front Royal, Virginia plant of American Viscose where, in America's largest viscose rayon producing unit approximately 2,000 people will be employed when capacity production is reached.

high humidity within the machines and to guard against fumes, they are enclosed by light-weight "Vinylite" plastic windows. Pumps and godets are driven through the same gear chain, to assure positive synchronization of all moving parts. Power is supplied to each machine by two 2-hp. induction motors, one connected to each end of the drive shaft. The newly spun yarn then passes through an ingenious continuous washing machine where it washes, bleaches and treats the yarn. Hydroextractors remove the excess moisture, after which large continuous dryers complete the drying and conditioning operation.

Unique Staple Fiber System

Fibro is also produced in the spinning room, by a battery of machines which represent an entirely new development in staple fibre equipment. These machines are especially designed for efficient production of a tow of unvarying quality. They are totally enclosed to eliminate fumes. After thorough opening, the staple is finally baled for delivery. Four hydraulic baling presses of 300-lb. capacity are provided for the purpose.

Active Plant Laboratory

Every step in production is regularly checked in the large laboratory so that definite high standards can be maintained. All finished products are thoroughly tested to prevent any variance in properties. Fibro, for example, must pass tests in fiber length, moisture content, tensile strength, denier, and extensibility before it is approved for delivery.

Facilities for Employee Welfare

Approximately 2000 men and women will be employed at the Front Royal plant when capacity production is attained. To protect their health, complete dispensary facilities are provided. Rooms for examination, complete X-ray and other equipment are under the direction of a full-time resident physician and assisting nurse.

Another interesting feature of the plant is its cafeteria, large enough to take care of all employees. Run on a non-profit-making basis, a complete, well-balanced lunch costs about twenty cents.

Interesting Display at Entrance

Situated at the northern portal to the famous Skyline Drive, the town of Front Royal annually attracts many thousands of sight-seers, and the new plant has proved an additional drawing card. Looking forward to the volume of tourist travel through this section, Company officials have provided an extensive display at the entrance to the plant. Exhibits include a series of interesting models of rayon-making processes, starting with wood-pulp and ending with the finished yarn.

SS Robin Sherwood Launched At Sparrows Point Yard

The SS Robin Sherwood, a new vessel for the South African trade, was launched at the Sparrows Point Yard of Bethlehem Steel Company, Shipbuilding Division on May 17.

The Robin Sherwood, the keel of which was laid on Oct. 10, 1940 is one of six vessels under construction at Sparrows Point for the Robin Line of Seas Shipping Company, Inc., New York City. Mrs. Frank V. Barns, of Mt. Kisco, New York, was the sponsor. Her husband is the Secretary and Attorney for Seas Shipping Company.

The Robin Sherwood will have a deadweight capacity of about 9,700 tons, a displacement of 15,084 tons, and a cargo space of about 600,000 cubic feet, of which 16,800 cubic feet is refrigerated space.

Defense Industry — A Base For Community Expansion?

by

J. T. ANDERSON

Industrial Engineer, Division Commerce & Industry, N. C. Department Conservation & Development

IT is not too early to begin to consider and plan defense industry's ultimate value to a community. To call the matter an economic problem of the first water is putting it mildly. The life or death of a community may hinge upon our ability or failure to find the right answers.

The first thing in order, it appears, is for the community to face-up to the fact that defense production will be curtailed as the emergency passes. Second, ordinary peace-time requirements for materials will not be sufficiently large to demand all of the facilities placed into operation during the emergency, and only those plants strategically located and capable of satisfactory change-overs from war-time production to manufacturing regular commercial lines, may continue operating. These two factors bring us face-to-face with the grim possibilities of reduced payrolls, curtailed employment, and the presence of thousands of imported workers—a large portion of whom may not have other jobs they can migrate to then or in the future.

It must be admitted that the likelihood of *all* the communities which have received defense industries converting these plants or their workers into permanent assets in their economy, is slim indeed. However, there are towns and cities—some of them second-chance localities because of World War I experiences—which should obtain some positive and permanent benefit from their defense industry or industries.

Let us examine one of these cities, briefly—Wilmington, North Carolina. I have selected Wilmington because I know something of its history, and also because its defense industry—a shipbuilding plant—poses a difficult and unique problem when viewed as a possible nucleus for industrial growth.

Located on the Cape Fear River, with a navigable channel since its first settlement, Wilmington is one of North Carolina's oldest cities. In former years vast quantities of cotton, naval stores and other raw products were shipped from the port. The city thrived and ranked number one in the state. Its first major set-back came when cotton for export through Wilmington began to decline, which was caused to a large extent by the location of textile mills in the Carolinas, and the movement of the naval stores industry farther South.

A boost was given by ship construction during the First World War. Ethyl Dow and several other sizable industries have proved welcome. But Wilmington, for a city of its size, was still considered industrially poor until the Newport News Shipbuilding Company announced cargo ships would be built there, and started its construction program this year. The payroll of some 4,000 or 5,000 additional workers must indeed be a bright prospect for Wilmington. Advance notice of how new money increases a city's pulse-beat was obtained through the establishment of the Army's $12,000,000 Camp Davis nearby.

The City's opportunity is before it again. Strategically located for many types of industry and blessed with excellent harbor and transportation facilities, Wilmington has certain basic advantages that should cause its citizens to bid strongly for new industry. Plants would not have to compete for shipbuilding labor as ample workers are available in the area; however, there is that incentive for certain types of manufacture to locate there to utilize any skilled surplus that may be on hand now, or that may be available should the yard curtail its construction program.

A program of industrial expansion begun under Wilmington's abnormal situation may or may not be successful. It does seem reasonable to believe, however, that the present activity holds many factors favorable to other industries seeking locations—and that it

(Continued on page 56)

Terminals already located at Wilmington are these of the Seaboard Air Line Railway, Standard Oil Company and the Wilmington Terminal Warehouse Company.

Fairchild Aerial Surveys, Inc.

New Vultee Aircraft Plant

THE new plant of the Nashville division of Vultee Aircraft, Inc., was dedicated Sunday, May 4, with Wendell Willkie and Sir Henry Self, Director General of the British Air Mission in America, as principal speakers.

This new plant, a $9,000,000 job, will manufacture Vultee's new 0-49 Liaison Observation plane for the United States Government, and the Vultee Vengeance Dive Bomber for the British Government.

While the new plant of Vultee Aircraft, Inc., at Nashville was the first airplane manufacturing unit to be completed in the inner defense zone since the national defense program was launched, it constitutes permanent industrial expansion. It will be devoted to the production of private planes when the emergency is over.

The building, whose walls are brick and glass and whose roof is supported by massive steel trusses with spans as great as 230 feet, is approximately 970 feet by 700 feet.

Total floor space is approximately 800,000 square feet, or roughly 18½ acres. The roof covers 680,000 square feet, and there are approximately 195,000 square feet of glass surface.

The construction of the building involved the excavation of 80,000 cubic yards, the use of 22,000 cubic yards of concrete, 890 carloads of sand and gravel, 125 carloads of crushed stone, 110,000 bags of cement, 1,300,000 pounds of reinforcing steel and 462,000 square feet of wire mesh.

It took 9,122,000 pounds of structural steel, 650,000 brick and 4,500 gallons of paint for this job.

Seven carloads of electrical conduit and 115 miles of wire were used in providing electric service. The lighting system included 1,700 reflectors of 1,000 watts, 700 fluorescent reflectors, 400 in-

(Continued on page 60)

Above—Wendell Willkie at lunch during the dedication ceremonies when he was principal speaker. Below—The completed plant as it now appears.

7,000 Employees to Work in Nashville's Permanent Airplane Manufacturing Plant Having Floor Space of About 18½ Acres

National Defense Program Awards in the South

ALABAMA

Value of Total Awards July 1, 1940 to May 15, 1941

Army Contracts	$111,537,650
Navy Contracts	33,543,938
U. S. Maritime Commission Emergency Ship Program	20,822,500
W. P. A. Defense Projects (F. W. A.)	3,073,046
U. S. H. A. Defense Housing Projects (F. W. A.)	2,073,046
Public Buildings Admin., Def. Housing (F. W. A.)	1,409,000
Office of Education Defense Training (F. S. A.)	979,200
National Youth Administration (F. S. A.) (Defense Training Funds for 1941)	1,258,008
Defense Plant Corporation (F. L. A.)	9,801,211
Reconstruction Finance Corporation (F. L. A.)	16,068,188

CONTRACTS AWARDED APRIL 16 TO MAY 15

Quartermaster Corps (Army)

Benham Underwear Mills, Scottsboro, 375,000 drawers, cotton shorts, $109,301.

Republic Steel Corp., Birmingham, Protective Decking Steel, $3,135.

Rogers Electric Co., Birmingham, electric distribution system at Atlanta General Depot, Ga., 673,282.

Steiner-Lobman Dry Goods, Montgomery, 2,369 prs. cotton trousers, $4,146.

To construct a new smelter and develop chrome properties, the Rustless Mining Co., Baltimore, Md., has been awarded $850,000 by the Reconstruction Finance Corp.

Medical Corps (Army)

West Point **Mfg. Co.**, Fairfax, wash cloths and hand towels, $14,198.

Supplies & Accounts (Navy)

Hardie Tynes Mfg. Co., Birmingham, high pressure air compressors, $220,120.

Ordnance (Army)

J. W. Wells Lumber Co., Montgomery, lumber, $3,277.

Corps of Engineers (Army)

Tennessee Coal, Iron & Railroad Co., Birmingham, corrugated metal pipe, $11,938.

Tissier Hardware Co., Selma, steel fencing, $9,077.

United Pipe & Supply Co., Holt, cast iron pipe, $2,526.

U. S. Pipe & Foundry Co., Birmingham, cast iron water pipe, $4,940.

Public Buildings Administration (Federal Works Agency)

Tennessee Coal, Iron and Railroad Co., Birmingham, (8) additional units of prefabricated demountable houses for industrial workers at Naval Powder Plant, Indian Head, Maryland, $23,008.

Metallurgical Products, Inc., Shreveport, La., has been awarded $125,000 by the Defense Plant Corp., for additional facilities involving construction and equipment of plant to produce powdered iron carbonyl.

ARKANSAS

Value of Total Awards July 1, 1940 to May 15, 1941

Army Contracts	$17,418,048
Navy Contracts	.....
W. P. A. Defense Projects (F. W. A.)	2,342,364
Office of Education Defense Training (F. S. A.)	601,755
National Youth Administration (F. S. A.) (Defense Training Funds for 1941)	863,373
Reconstruction Finance Corporation (F. L. A.)	151,845

FLORIDA

Value of Total Awards July 1, 1940 to May 15, 1941

Army Contracts	$17,472,948
Navy Contracts	74,016,470
W. P. A. Defense Projects (F. W. A.)	15,891,907
U. S. H. A. Defense Housing Projects (F. W. A.)	2,064,461
Public Buildings Admin., Def. Housing (F. W. A.)	2,248,200
Office of Education Defense Training (F. S. A.)	559,685
National Youth Administration (F. S. A.) (Defense Training Funds for 1941)	652,491
Reconstruction Finance Corporation (F. L. A.)	2,007,485

CONTRACTS AWARDED APRIL 16 TO MAY 15

Corps of Engineers (Army)

A. J. Honeycutt Co., Inc., Birmingham, Ala., heating systems, MacDill Field, $16,181.

Merrill Stevens Dry Dock & Repair Co., Jacksonville, wave break and towing equipment, $14,510.

J. Olsen & Son, Jacksonville, repairing U. S. oil barge, $6,201.

Aqua Systems, Inc., New York, N. Y., construction of gasoline fueling system, Municipal Airport, Jacksonville, $53,463.

Yoemans Brothers Co., Chicago, Ill., sewage sump pumps, Drew Field, Tampa, $2,400.

Florida Portland Cement Co., Tampa, Portland cement, MacDill Field, $11,200.

Sherman Concrete Pipe Co., Tampa, concrete culvert pipe, $23,400.

John T. Maple, Tampa, electrical installations, MacDill Field, $5,240.

Bureau of Ships (Navy)

Tampa Shipbuilding Co., Inc., Tampa, three destroyer tenders (cost-plus-fixed-fee basis), estimated cost, $40,257,000.

Koppers Company, Bartlett Hayward division, Baltimore, has been awarded a contract by the Tennessee Valley Authority for the construction of one of its semi-water gas plants and auxiliary equipment to produce synthetic ammonia for the manufacture of explosives. The plant, which is to be of the new "black-out" type, will be located at Wilson Dam, near Sheffield, Ala.

Construction will be started as soon as possible and the plant is to be ready for operation 90 days later. Equipment will be fabricated in Baltimore at the plant of Bartlett Hayward which is now wholly engaged in defense production including a large number of 37 millimeter anti-aircraft gun mounts.

The plant will produce about 20,000,000 cubic feet of gas a day from coke, steam and air. It will provide the elements from which other equipment will create the synthetic ammonia. The amount of ammonia or the quantity of explosives which will be produced was not revealed.

The "black-out" building which will house the Koppers plant will be built by Stone and Webster and will be without windows but will be equipped with ventilating devices designed to prevent the escape of light from the interior. Dust traps of Koppers design will prevent the escape of incandescent carbon from the plant stacks. This, also, is a precaution against nighttime observation from the air.

Equipment will consist of four 12-foot mechanical generators which will be fully automatic in operation and control, making continuous operation possible. Other equipment includes combustion chambers, steam accumulators and waste heat boilers.

Yards & Docks (Navy)

Standard Asbestos Mfg. & Insulating Co., Kansas City, Missouri, unloading and stock-piling pipe at Homestead and water supply system, Naval Station, Key West, $16,221.

Duval Engineering Co. & Associates, Jacksonville, Contract No. 4132. Additional work. Existing cost-plus-fixed-fee contract: "O" Purchase and installation of cranes, hoists, and trolleys in assembly and repair shop at NAS, Jacksonville, $125,000.

Curtis Wright Corp., Buffalo, N. Y., has entered into a supplemental agreement with the Defense Plant Corp., for additional machinery and equipment, revision of plant construction and for land improvements at the company's St. Louis plant. The amount involved is $1,673,460.

GEORGIA

Value of Total Awards July 1, 1940 to May 15, 1941

Army Contracts	$50,522,725
Navy Contracts	3,219,193
WPA Defense Projects (FWA)	5,367,846
USHA Defense Housing Projects (FWA)	1,704,833
Public Buildings Admin., Def. Housing (FWA)	2,452,500
Office of Education Defense Training (FSA)	743,233
National Youth Administration (FSA) (Defense Training Funds for 1941)	1,426,365
Reconstruction Finance Corporation (FLA)	68,701

CONTRACTS AWARDED APRIL 16 TO MAY 15

Quartermaster Corps (Army)

Thomaston Cotton Mills, Thomaston, 50,000 cotton sheets, $43,875.

Rogers Electric Co., Birmingham, Ala., construction of electrical distribution system at Atlanta General Depot, $73,282.

Happ Brothers Co., Macon, 1,235 pr. khaki cotton trousers, $2,470.

Henry A. Ivey, Decatur, construction of parachute building at Lawson Field, Ft. Benning, $140,771.

Corps of Engineers (Army)

Carter Electric Co., Augusta, electric distribution system, Augusta Air Base, $17,872.

Supplies & Accounts (Navy)

Golden City Hosiery Mills, Inc., Villa Rica, black mercerized cotton socks, $48,000.

Southern Aircraft Corp., Garland, Texas, has been awarded $100,000 by the Reconstruction Finance Corp. for plant expansion, additional machinery and working capital connected with the manufacture of airplane parts.

KENTUCKY

Value of Total Awards July 1, 1940 to May 15, 1941

Army Contracts	$31,056,494
Navy Contracts	8,969,863
W. P. A. Defense Projects (F. W. A.)	2,822,422
Public Buildings Admin., Def. Housing (F. W. A.)	1,935,000
Office of Education Defense Training (F. S. A.)	776,219
National Youth Administration (F. S. A.) (Defense Training Funds for 1941)	1,095,068
Defense Plant Corporation (F. L. A.)	5,504,611
Reconstruction Finance Corporation (F. L. A.)	40,040,000

CONTRACTS AWARDED APRIL 16 TO MAY 15

Quartermaster Corps (Army)

General Shoe Lace Co., Inc., Louisville, 250,000 pr. shoe laces, $4,050.

Louisville Tin & Stove Co., Inc., Louisville, lot, tin dippers and vegetable graters, $5,875.

Logan Co., Louisville, 2,400 repair parts for bedsteads, $343.

Atmospheric Nitrogen Corporation of New York, N. Y., supplemental contract for construction of electric generating plant, Ohio River Ordnance Plant, West Henderson. Fixed-fee basis. Estimated cost $1,100,001.

Stratton & Terstegge Co., Louisville, 2,800 butchers' saws and tongs, $2,280.

Louisville Tin & Stove Co., Inc., Louisville, 500 water heater shields, $520.

Wuest Brothers, Inc., Louisville, 500 tool boxes, $1,075.

Kentucky Cardinal Uniforms, Inc., Louisville, 1,045 bakers' and cooks' coats, $1,330.

Corps of Engineers (Army)

Breslin Construction Co., Inc., Louisville, tar and liquid asphalt, $3,892.

Hart Mfg. Co., Louisville, Army ranges, $2,931.

Louisville Crushed Stone Co., Louisville, crushed limestone, $8,430.

W. L. Osborne, Rineyville, agricultural limestone, $2,376.

The Sherwin Williams Co., Louisville, paint, Chanute Field, airport, Rantoul, Ill., $5,396.

Ordnance (Army)

Kentucky Tent & Awning Co., Louisville, canvas paulins, $37,350.

Louisville Electric Manufacturing Co., Louisville, power hacksaws, $2,904.

Wadsworth Watch Case Co., Inc., Dayton, delay element parts, $130,374.

For working capital and to purchase raw materials connected with a War Department contract for shells, the Reconstruction Finance Corp., has awarded $112,500 to the Texasteel Manufacturing Co., Fort Worth, Texas.

Supplies & Accounts (Navy)

Covington Electrical Mechanical Co., Bowling Green, manually-operated cranes for shipboard installation, $37,180.

R. F. C. (Federal Loan Agency)

Brown & Williamson, Louisville, liquidate British owned American investments and to pay note, $40,090,000.

LOUISIANA

Value of Total Awards July 1, 1940 to May 15, 1941

Army Contracts	$25,594,541
Navy Contracts	4,863,814
U. S. Maritime Commission Emergency Ship Program	42,341,000

McDonnell Aircraft Corp., Robertson, Mo., has been awarded $512,717 by the Defense Plant Corp., for the acquisition of land to develop plant facilities including machinery and equipment for the manufacture of aircraft parts.

Civil Aeronautics Admin. (Commerce) (Airport Expansion Program)	280,000
WPA Defense Projects (FWA)	6,686,265
Public Buildings Admin., Def. Housing (FWA)	855,500
Office of Education Defense Training (FSA)	631,269
National Youth Administration (FSA) (Defense Training Funds for 1941)	994,699
Defense Plant Corporation (FLA)	125,000

CONTRACTS AWARDED APRIL 16 TO MAY 15

Corps of Engineers (Army)

Wray Air Conditioning Corp. of Texas, Dallas, Texas, air-conditioning system, Barksdale Field, $4,898.

Gifford-Hill & Co., Inc., Shreveport, washed gravel for Barksdale Field, $5,790.

Quartermaster Corps (Army)

Lee Mfg. Co., Inc., Shreveport, 4,137 khaki cotton shirts, $7,117.

Lee Mfg. Co., Inc., Shreveport, 1,241 khaki cotton trousers, $2,172.

Marine Supplies, Inc., New Orleans, 3,000 bakers' & cooks' coats, $3,306.

B. Bennett Co., Inc., New Orleans, 1,887 bakers' & cooks' trousers, $1,586.

Theodore Weiss & Co., New Orleans, 1,424 bakers' & cooks' trousers, $1,590.

E. H. Blum, New Orleans, 1,028 prs. bakers' & cooks' trousers, $960.

The value of all defense contracts awarded by the Army and Navy Departments up 'til May 15 totaled $12,960,870,991. Of this amount $2,563,888,417 or nearly 20% has gone to plants in the Southern states. The latter figure is based upon the state to which the order is given and does not take into account the large amount of defense work being done in southern plants whose head office is located outside the South.

Comas Mfg. Co., Inc., New Orleans, 1,003 prs. bakers' & cooks' trousers, $982.

Jaubert Brothers, New Orleans, 79 prs. bakers' & cooks' trousers, $79.

O. J. Key Marine Supply, Inc., New Orleans, 1,982 prs. bakers' & cooks' trousers, $2,304.

Signal Corps (Army)

Equitable Equipment Co., New Orleans, steel cargo barge, $14,850.

Supplies & Accounts (Navy)

Woodward Wight & Co., Ltd., New Orleans, carbon & high speed steel countersinks and reamers, $24,192.

MARYLAND

Value of Total Awards July 1, 1940 to May 15, 1941

Army Contracts	$207,692,746
Navy Contracts	129,936,642
U. S. Maritime Commission Emergency Ship Program	104,747,375
Farm Security Admin. (Agr.) (Defense Housing)	110,682
W. P. A. Defense Projects (F. W. A.)	5,422,247
Public Buildings Admin., Def. Housing (F. W. A.)	5,633,449
Office of Education Defense Training (F. S. A.)	845,466

Benson Manufacturing Co., Kansas City, Mo., has been awarded $50,000 by the Reconstruction Finance Corp. to construct a new building and purchase machinery and equipment for increased production of airplane parts.

National Youth Administration (F. S. A.) (Defense Training Funds for 1941)	692,354
Defense Plant Corporation (F. L. A.)	1,685,000
Reconstruction Finance Corporation (F. L. A.)	1,025,350

CONTRACTS AWARDED APRIL 16 TO MAY 15

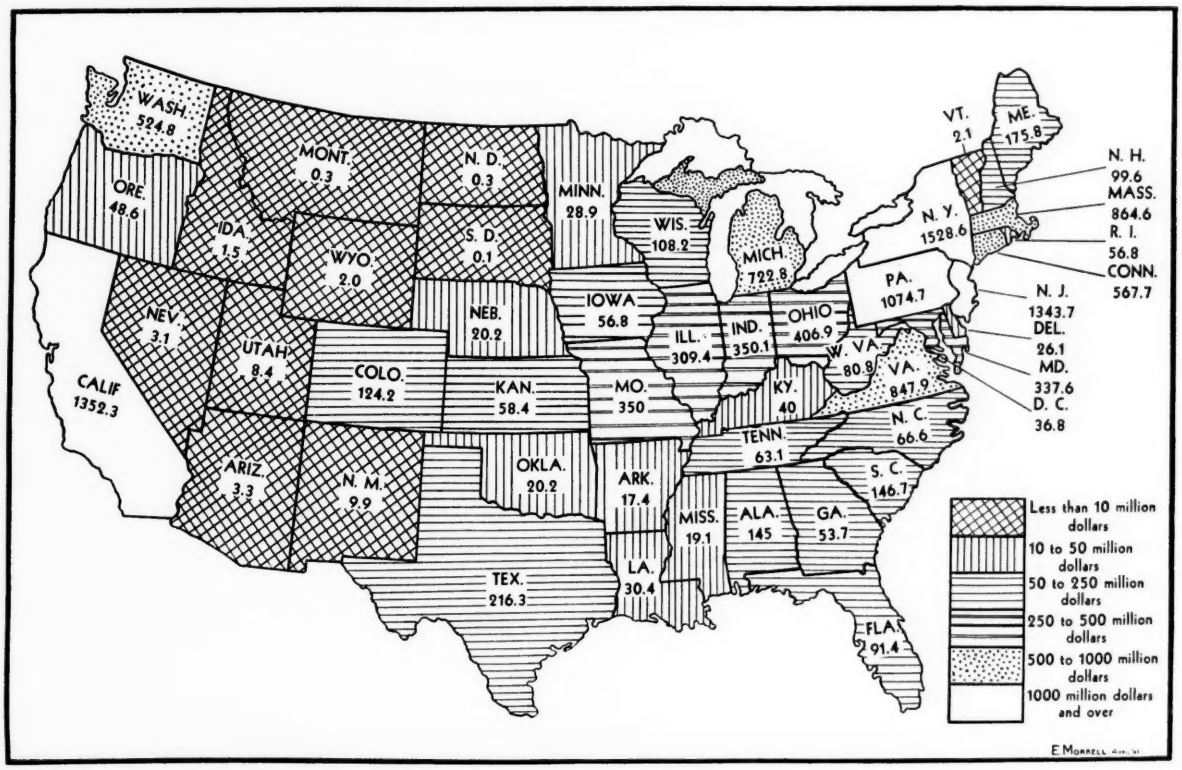
Quartermaster Corps (Army)

Albert H. Jaffe & Co., Baltimore, 47,661 nurses' caps, $11,265.

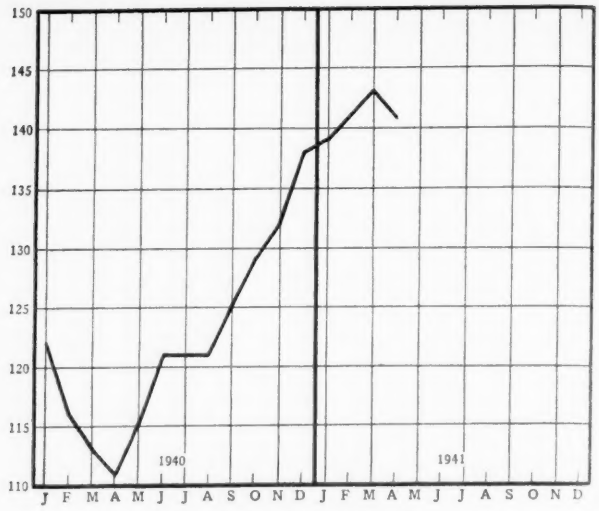
Charles D. Briddell, Inc., Crisfield, 9,000 butchers' cleavers, $10,200.

S. Rosenbloom, Inc., Crisfield, 60,000 bakers' & cooks' coats, $67,162.

(Continued on page 54)

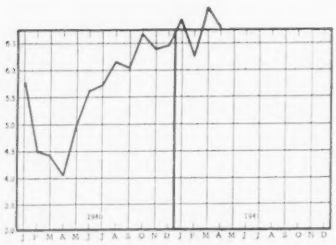


Industrial Production Trends



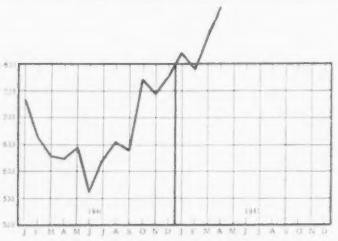
INDUSTRIAL PRODUCTION
(Index 1935-39=100)

PRELIMINARY estimates of industrial production for April indicate that the figure for that month, on the 1935-1939 = 100 adjusted index, was 141, a drop of two points from the March high of 143. This decline was undoubtedly due to the strike situation in that month, but incomplete returns indicate the May figure will have caught up with the previous month's decline. Along with other products suffering from the effects of strikes was steel, which in April



STEEL INGOT PRODUCTION
(Millions short tons)

was produced in the amount of 6,757,728 tons at a rate of 97.6% of capacity. Preliminary estimates for the rate of capacity during May are 98.6%. Total steel production for the first four months of 1941 was 27,056,024 tons. In comparison with a year ago, this is an increase

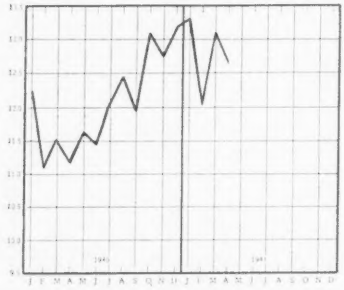


COTTON CONSUMPTION
(Thousands of bales)

to date of more than eight million tons or more than double the total production of April 1940.

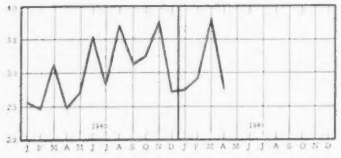
Cotton consumption during April far exceeded most people's expectations when the total number of bales consumed reached 920,142 which is more than 65,000 bales above the March figure and nearly 300,000 bales more than was consumed in April a year ago. Domestic mills continued to operate at a high rate of consumption and it is now entirely possible that the annual figure may exceed 10 million bales. Operations of mills are now likely to continue at or above the present rate of consumption.

Reflecting slightly decreased industrial production, electric power in April was less than the March figure of 13,-



ELECTRIC POWER PRODUCTION
(Billions kilowatt hours)

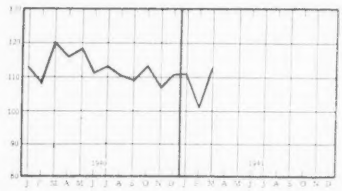
094,704,000 kilowatt hours, being 12,-668,715,000 kilowatt hours. In spite of this decline, the average daily production of electric energy was more than 50 million kilowatt hours greater than during the corresponding month of last



CARLOADINGS
(Millions)

year.

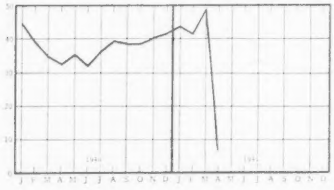
Carloadings during April suffered similarly with a decline of approximately one million cars from the March high of 3,818,000 to 2,794,000 in April. The



CRUDE PETROLEUM PRODUCTION
(Millions of barrels)

latter figure however is approximately 300,000 cars greater than during April of 1940. Early estimates of the May figure indicate a sharp rise that may well approximate the March figure.

Crude petroleum production which

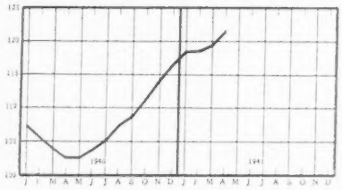


BITUMINOUS COAL PRODUCTION
(Millions of tons)

declined somewhat during February reasserted itself in March and even surpassed the January figure with a total of 112,817,000 barrels. Compared with a year ago however, this is still low for then the figure was 120,075,000 barrels. The daily average output in March was about 40,000 barrels above the February average.

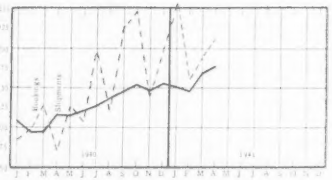
Bituminous coal production was the most heavily hard-hit of commodities as a result of strikes during April when production was only slightly above six million tons, compared with 48,250,000 tons in March. Early returns for May however, indicate a return almost to normalcy with production exceeding 45 million tons.

Factory employment during April



FACTORY EMPLOYMENT
(*Adjusted index*, 1923-25=100)

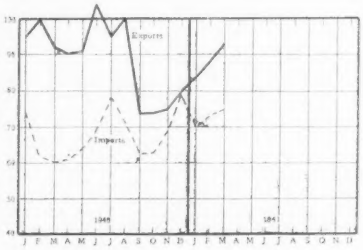
broke all records when the 1923-25 = 100 adjusted index registered 121.7. The increase in factory wage earners from March amounted to 190,000 or 2% while weekly wages rose more than $6,100,000. Comparison with April of last year shows employment up 18.5% and factory payrolls up 37.3%. Total non-agricultural employment reached an all-time peak of 37,617,000. This exceeds the previous high, reached in September



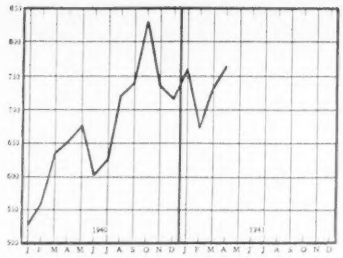
STRUCTURAL STEEL
(*Thousands of tons*)

1929, by 147,000 and was 2,735,000 workers greater than in April 1940. In spite of the great decline in employment due to coal strikes, there were 390,000 more non-agricultural workers in April than in March.

Structural steel shipments during April reached the highest point this year with 176,594 tons, bringing the total for 1941 to 672,699 tons, compared with



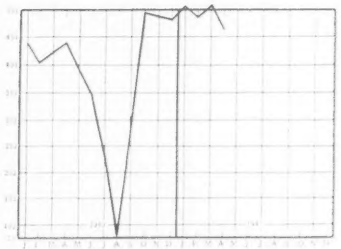
IMPORTS AND EXPORTS
(*Adjusted index* 1923-25=100)



SOUTHERN PINE PRODUCTION
(*Million board feet*)

420,308 tons for the same four months of 1940. New orders booked during April totaled 211,301 tons, the largest since January. The business booked during the first four months of the year amounted to 872,167 tons.

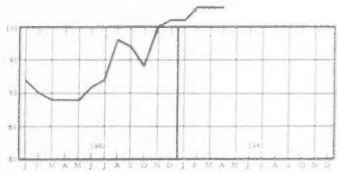
Import and export figures have not



AUTOMOBILE FACTORY SALES
(*Thousands*)

yet been released for April but early estimates indicate that the steady rise during the first three months of the year was maintained during April, though to a slightly lesser degree than previously.

Final figures concerning production of Southern pine during March show that the total reached was 734 million board feet, compared with 676 million board

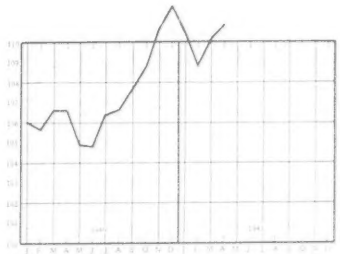


DEPARTMENT STORE SALES
(*Adjusted index* 1923-25=100)

feet in February and 636 million board feet in March 1940. Early returns for April show that production in that month held up fairly well and probably surpassed the March figure. May returns however point to a decline, though the closing week may possibly have brought the total up to earlier months.

Factory sales of automobiles during April were 462,257, compared with 507,868 in March. Though this is a slight decline and in contrast to the usual slight rise at this time of year, it is not likely to be followed during the next three months by the usual seasonal drop.

Department store sales, according to the 1923-25 = 100 adjusted index, remained for the third month in succession, at 103 during April, compared with 89 in April 1940. While it is not anticipated that this figure will go higher,

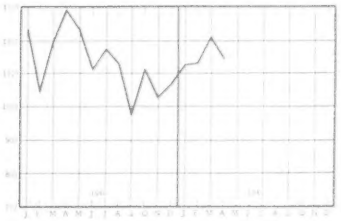


U. S. TREASURY BONDS
(*Average price per $100 bond*)

it is unlikely to drop.

The average price of $100 U. S. Treasury bonds, which dropped to 110.1 in March, was back again during April to the February figure of 108.8. Though there is likely to be some slight fluctuation in this during the ensuing months, the difference is expected to be small.

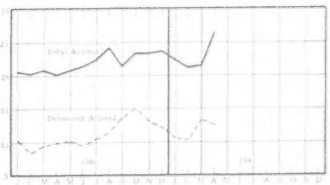
Commercial failures fell back in



COMMERCIAL FAILURES
(*Total number*)

April to 1,149 against 1,211 in March. On the other hand, total liabilities increased from $13,444,000 to $13,827,000.

Increased output of chemical products is reflected in the rise of ethyl alcohol production, which during April totaled 26,248,451 gallons, the highest production for a considerable time. On the other hand, denatured alcohol declined slightly to 12,653,601 gallons.



ALCOHOL PRODUCTION
(*Millions of gallons*)

Important New Industrial Plants and Expansions in the South During May

Contracts Awarded

ALABAMA

MOBILE—furniture—M. T. Reed Construction Co. of Ozonie, Miss., has contract for erection of $250,000 factory building at suburban Navco Station for Southern Furniture Manufacturing Co. of Canton, Miss.; steel and corrugated metal; 1,000 x 150 ft.; approximately 700 railroad carloads of walnut, mahogany, and maple-finish bedroom furniture will be produced annually; site cleared.

GADSDEN—expansion — Dwight Manufacturing Co. will erect $1,750,000 mill addition to increase capacity 30 per cent; expansion to include brick and steel building; install 20,000 spindles; planned by J. E. Sirrine & Co., Greenville, S. C.; will be constructed under supervision of J. E. Sirrine & Co. by Daniel Construction Co., Anderson, S. C.

SHEFFIELD—defense plant — Bartlett Hayward division of Koppers Co. at Baltimore, received contract from TVA for semi-water gas plant and for auxiliary equipment for national defense plant to be erected at Muscle Shoals; plant will be used for production of synthetic ammonia for manufacture of explosives; all equipment for plant will be fabricated in Baltimore; will produce 20,000,000 cu. ft. of gas daily from coke, steam and air. The "black-out" building to house the Koppers plant will be built by Stone & Webster, and will be without windows but will be equipped with ventilating devices designed to prevent escape of light from the interior; dust traps of Koppers design will prevent escape of incandescent carbon from plant stacks; equipment will consist of four 12-foot mechanical generators, fully automatic in operation and control, other equipment includes combustion chambers, steam accumulators and waste heat boilers.

TALLADEGA—bag loading plant—Sullivan, Long & Hagerty and Algernon Blair, Talladega, awarded contract jointly for erection of bag loading plant at Talladega, to be known as Coosa River Ordnance Plant; will be operated by Brecon Loading Co., Wilmington, Del.; Wiedeman & Singleton, Archts., Talladega.

BIRMINGHAM—air conditioning—York Ice Machinery Corp., York, Pa., has contract for an air conditioning system in blast furnace for Sloss-Sheffield Steel & Iron Co.

ARKANSAS

SHERIDAN — plant — Nathan Hubbard has contract for construction of $50,000 concentration plant for J. L. Williams Lumber Co.; consists of dry kilns; mill sheds; will have a daily capacity of 50,000 ft.; foundation laid.

GEORGIA

SAVANNAH—docks, etc.—Savannah Steel Products Co., has contract for construction of 4 shop buildings and docks for Savannah Machinery & Foundry Co., Ship Building Division, 632 Indian; A. Thomas Bradbury, William-Oliver Bldg., Atlanta, Ga., Archt.

MACON—fuse loading plant—V. P. Loftis, Builders Bldg., Charlotte, N. C., general contractor for first unit of $2,000,000 Navy fuse loading plant south of city limits to be operated by Reynolds Corp., 515 Bibb Bldg., Macon, has awarded the following subcontracts: Builders Specialties Co., 526 Forrest Rd., N. E., for pressed steel door frames, hollow steel and metal covered doors and transoms and sliding metal covered doors; Overhead Door Corp., 135 Luckie N. W. overhead doors; Federal-American Cement Tile Co., Candler Bldg., pre-case concrete roof deck slab; American Art Metals Co., 318 Edgewood Ave., N. E., aluminum entrances; all Atlanta; R. A. Bowen, Macon, concrete and masonry sand; H. H. Robertson Co., Farmers Bank Bldg., Pittsburgh, Pa., for Robertson asbestos protected metal Mansard type roofing and Robertson cellular steel flooring; Wearn Lumber Co., 1420 S. Mint St.; W. F. Casey & Co., 510 W. 4th St., glazed tile, both Charlotte, N. C.; Kalman Floor Co., 110 E. 42 St., New York, special topping finish; Birmingham Ornamental Iron Co., Birmingham, Ala., miscellaneous metal; Guaranteed Waterproofing Co., 1317 Westover Terrace, Greensboro, N. C., dampproofing and waterproofing; George E. Norman Roofing Co., 520 Elliott St., Charlotte, N. C., roofing.

KENTUCKY

LOUISVILLE — plant — B. F. Goodrich Rubber Co., 400 S. Main St., Akron, Ohio, plans immediate construction of $1,000,000 plant for manufacture of transparent rubber-like material used as electric insulation in warships, etc.; Batson Cook Co., West Point, Ga., Gen. Contr.; power for plant to be supplied from power plant now under construction by Louisville Gas & Electric Co.; main plant, which will quadruple company's output of the versatile material which is derived from limestone, coke, salt and water is the third major expansion in Koroseal capacity initiated during past 18 months; will be located on Bells Lane, 7 miles southwest of Louisville near the Ohio River, on 20 acre site in 5 separate buildings with a combined floor space of 75,000 square feet; new plant has been given a preference rating for construction materials and machinery by Office of Production Management at Washington; expected to be completed and in operation within 6 to 8 months; will contain 4 units for manufacture of raw material and a steam power plant.

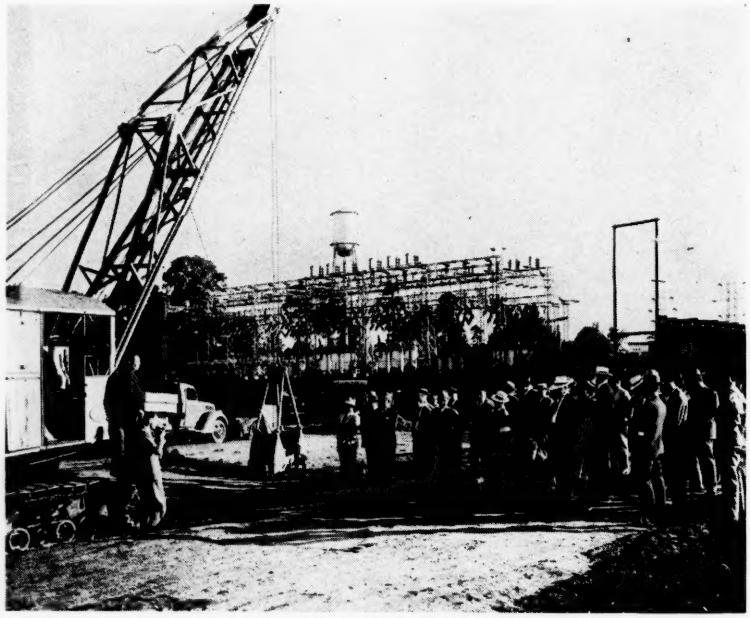
LOUISIANA

BATON ROUGE—pipe—Plantation Pipe Line Co., joint operation of Standard Oil Co. of New Jersey, Standard Oil Co., of Ky. and Shell Union Oil Corp., 65 Broadway, New York, placed following contracts for 126,600 tons of pipe for proposed gasoline pipe line from Baton Rouge to Greensboro, N. C., at cost of $15,000,000: Pipe orders divided to include, 66,600 tons to National Steel Corp., Grant Bldg., Pittsburgh, Pa.; 25,000 tons to Jones & Laughlin Steel Corp.; 18,000 tons to Youngstown Sheet & Tube Co., Youngstown, Ohio; 9,500 tons to Republic Steel Corp., 1406 Republic Bldg., Cleveland, O.; 1,500 tons, Spang Chalfant & Co., Grant Bldg., Pittsburgh, Pa.

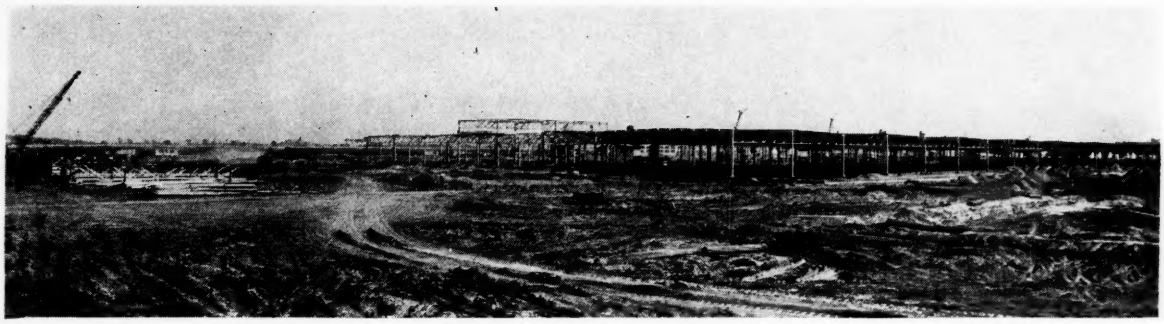
LAKE CHARLES—grain elevator—Louisiana State Rice Milling Co., let contract to T. Miller & Sons for grain elevator; big elevators will be 91 ft. high and 70 to 60 ft. wide; capacity of 40,000 bags of rice; cost $40,000.

MONROE—compressor station—Southern Gas Lines, Inc. of Monroe, surveying site for erection of compressor station to be located 1 mile south of Clarks on Alexandria-Monroe Highway; estimated cost $200,000; Ford, Bacon & Davis, 39 Broadway, New York, General Contractor.

NEW ORLEANS—shipyard buildings — J. G. White Engineering Corp., Hibernia Bldg., engineer and contractor for construction work at Louisiana Shipyards on Industrial Canal, let contract to R. P. Farnsworth & Co., 1515 N. Salcedo St. for foundation work and concrete work for 2 shipways and 2 slab and machinery buildings, and for construction of 7 new buildings, to include: 1 yard office, 2 first aid and timekeepers offices, 2 clock houses and 2 store



J. M. Broughton, Governor of North Carolina, speaks to a group of state, county and company officials gathered for ground-breaking ceremonies which started construction on a $6,000,000 addition to the Carolina Power & Light Company's Cape Fear steam electric generating station located near Moncure, N. C.



The $10,000,000 aircraft assembly plant being built at Kansas City under supervision of United States Army Engineers is shown above as its structural steel frame is being covered with corrugated roof sections. J. Gordon Turnbull, Cleveland consulting engineer who made the designs, acted in the same capacity on the new Dallas, Texas plant of North American Aviation, Inc., which will operate the plant upon completion. The contract was let jointly to G. L. Tarlton Construction Co., William McDonald Construction Co., both St. Louis, and S. Patti Construction Co., of Kansas City.

rooms and locker buildings. Other contracts include. Concrete work on columns, Pittman Brothers Construction Co., 2800 N. Galvez St.; painting, Frank J. Matthew Co., 920 Union St.; temporary electric service power line, New Orleans Public Service, Inc., 317 Baronne St.; Bethlehem Steel Co., Bethlehem, Pa., for furnishing and erecting structural steel for machine shop and warehouse; R. J. Dorn Co., Inc., 5300 Tchoupoulas St., for roofing and siding for 2 slab and machinery buildings and 6 layout and welded assembly shops.

MISSOURI

ST. LOUIS—factory—Murch-Jarvis, Inc., 111 N. 4th St., has contract for $125,000 factory for Ajax Corrugated Paper Co., southeast corner of N. Broadway and Taylor Ave.: 1-story; 100 x 404 ft.; brick, steel sash and timber with concrete foundation; install sprinklers, steam unit heaters, truck loading facilities, etc.; Hari Van Hoefen, Archt., 408 Pine St.; present address of Ajax Corrugated Paper Co., 3600 N. Second St.

NORTH CAROLINA

DURHAM—addition—W. E. Baker Construction Co. has contract for 5 new units to Lucky Strike storage facilities in East Durham area; units will provide a total of 45 warehouses in area occupied on Ellis Road; open-air type of warehouse with framework of concrete and steel; sides if iron sheathing; American Suppliers, Inc., subsidiary of American Tobacco Co., owners.

OKLAHOMA

TULSA—structural steel—Midland Structural Steel Co., Cicero, Ill., has contract at $2,488,200 for structural steel and American Monorail Co., 13107 Athens Ave., Cleveland, Ohio, has contract at $313,182 for cranes, carriers and hoisting equipment for aircraft assembly plant to be erected by Government and operated by Douglas Aircraft Co., Santa Monica, Calif.; Manhattan Construction Co., Muskogee, and Long Construction Co., Philtower Bldg., Tulsa, affiliates, general contractors.

SOUTH CAROLINA

DILLON—paprika plant—E. I. Reardon, of Chamber of Commerce, announced work will begin within ten days on main plant of Carolina Paprika Mill, Inc.; cost $50,000; necessary track facilities have been installed and orders for machinery placed.

TEXAS

Power line—Houston Light & Power Co., Houston, started work on 50-mile, 130,000-volt power line to extend from West Junction, near Houston to Dow Chemical Co.'s plant at Freeport and to rural lines to serve 7 communities in Alvin area; focal point of operation will be at Angleton, where company is erecting a warehouse; line to serve Dow Chemical Co. is a 3-phase, 130,000 volt, will run between Danbury and Angleton.

BROWNSVILLE—pipe line—Continental Oil Co., K. T. Johnson, 2050 Mistletoe St., San Antonio, has under construction expansion program in south Texas; plans pipe line to port of Brownsville from Starr county, construct deep water terminals on Brownsville ship channel, erect topping plant, natural gas processing plant and a repressuring plant.

DEER PARK—addition—Shell Oil Co., Inc., Houston, let contract to C. F. Braun Co., of Alhambra, Calif., to build an additional petroleum plant at its Deer Creek refinery; will be a duplicate of present plant; combined capacity of plants 4,000,000 gallons toluene annually; the 2 plants represent an investment of $1,000,000.

HOUSTON—plant—Brown Construction Co., 620 Lockwood, has contract for erecting $50,000 plant on a 13-acre site at Greenwood and Industrial Bay for Truscon Steel Co., division of Republic Steel Co.; included in project is a 1-story office building, brick and stucco, 35 x 60 ft.; warehouse, 32 x 160 ft., 1-story, steel frame and paneled steel siding with steel roof; let following subcontracts: Robischung-Kiesling Co., 4805 Travis St., plumbing; Fisk Electric Co., 3104 Milam St., electric; Seline Sheet Metal Works, 1921 Washington Ave., roof and sheet metal; Seay Floor Covering Co., 503 Enid St., asphalt tile; Jacobe Rubin & Sons, Inc., 1700 Dowling St., glass and glazing; B. B. Bettell & Sons, 3212 White Oak Drive, painting; Herbert Green, 5004 Calhoun Rd., lathing and plastering; Parker Bros. & Co., Inc., P. O. Box 96, concrete; Macatee & Sons, P. O. Box 4239, brick and tile; Joseph Finger, Inc., Archt., National Standard Bldg.

TEXAS CITY—tin smelter—Ford, Bacon & Davis, Inc., 39 Broadway, New York, reported, signed contract with Tin Processing Corp., 10 Rockefeller Plaza, New York, for construction of tin smelter, to be erected by Government, operated by Tin Processing Corp.; capacity of 18,000 tons a year from Bolivian ore; plant will be adjacent to the $15,000,000 plant now under construction for Union Carbide & Carbon Corp.

HOUSTON—shipbuilding plant — Rust Engineering Co., Pittsburgh, Pa., general contractor for construction of 12 steel frame buildings at plant of Houston Shipbuilding Corp., let contract for structural steel to Mosher Steel Co., 3910 Washington St. and Commercial Iron Works, 6422 Esperson St.; corrugated asbestos to Standard Asbestos Manufacturing and Insulating Co., 5601 Clinton Drive; plumbing to Modern Plumbing & Electric Co., Inc., 506 Rusk St.; steel sash to Detroit Steel Products Co.; roofing to A. M. Bowles, Inc., 4005 Center St.; pile driving to Ole Peterson & Son, 6608 Capitol St., piling for foundation well underway and foundation concrete now being started; some of the smaller buildings will be erected within the next month and shortly thereafter construction work on larger units will be pushed to an early completion.

VIRGINIA

FIELDALE — addition — John Smith & Sons, Leaksville, N. C., has contract at approximately $69,000 for extension to towel mill for Marshall Field Mfg. Division; Robert and Co., Inc., Archts. & Engrs., Bona Allen Bldg., Atlanta, Ga.

Contracts Proposed

ALABAMA

BIRMINGHAM — expansion — Southern Natural Gas Co. plans $4,497,000 expansion to include installation of 17,300 h.p. of additional compressors at a cost of $1,617,000 and installation of 125 miles of pipe at cost of $2,800,000.

ARKANSAS

Steam power plant—State Utilities Commission, Little Rock, granted permission to Arkansas Power & Light Co., Pine Bluff, to expend $3,000,000 to construct a 30,000 kw. steam power plant in Southwest Arkansas sour gas fields; also granted a conditional permit to extend the company's Batesville-Norfolk Dam high voltage transmission line from Norfolk to interconnect with the Empire District Electric Co's system in southern Missouri, estimated cost, $500,000; an application by Arkansas Power & Light Co. to construct the proposed Blakely Mountain Dam on the Ouachita River, near Hot Springs, to cost $6,500,000, was deferred for future action.

FLORIDA

MIAMI—manufacturing center — M. H. Dawson, will expend $60,000 to convert 11-story building northwest corner of N. W. Second St. and First Ct. into manufacturing center for garment firms; construction started; a 3-story annex adjacent to building on the north will also be erected.

MIAMI—milk plant—Miami Home Milk Producers Association, care of W. T. Eefting, 5150 N. W. 22nd Ave., has plans in progress by L. R. Christie, Archt., 319 N. E. 36th St. for milk plant and offices, east side 2400 block N. W. 7th Ave.; 1 and 2-story; 100 x 200 ft.; concrete, brick and steel; built-up roof; metal sash; dairy brick and wood floors; structural tile wainscoting; plate glass; insulating for cold storage room; boiler rooms; oil burning boilers; refrigerating equipment; milk processing equipment, etc.; cost $90,000.

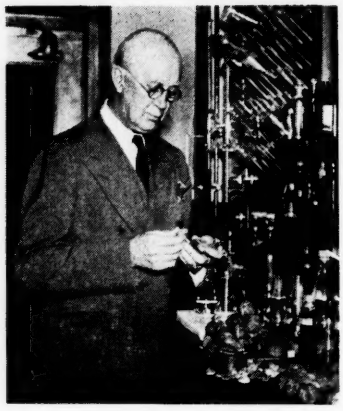
TAMPA—mold loft—Tampa Shipbuilding Co., Inc., received low bid at $136,584 from Albert Haworth, 628 Raymond Ave., for store and mold loft building; Moore Pipe & Sprinkler Co., 1150 W. State St., Jacksonville at $8,962 for sprinkler system.

KENTUCKY

LOUISVILLE—synthetic rubber plant—E. I. du Pont de Nemours & Co., W. S. Carpenter, Jr., Pres., Wilmington, Del., will erect plant for production of neoprene synthetic rubber; capacity of plant to be 10,000 long tons a year; purpose of new construction is to provide a supply that will be adequate for all defense and commercial needs including a substantial tonnage for manu-

(Continued on page 52)

Tung Oil Remains Industry's Best Drying Oil



by

Dr. HENRY G. KNIGHT

Chief, Bureau of Agricultural Chemistry and Engineering, United States Department of Agriculture

1940 Crop Estimated at Five Million Pounds

Suitable Land in South Believed Sufficient to Raise Crop Large Enough For America's Needs

MORE than a million dollars in new wealth will come to tung growers and millers in the South this year as a result of the record tung fruit crop that was harvested in 1940. It is estimated that 5 million pounds of oil will be produced during the 1940-41 milling season from tung trees in Alabama, Florida, Georgia, Louisiana, Mississippi, and Texas. The commercial production of tung oil, a 5,000-year-old Chinese industry, is now being transplanted to American soil. There are still chemical and agronomic kinks that need to be ironed out of this fast-growing enterprise, but sufficient work has already been done to lead us to believe that continued constructive efforts will enable us to succeed in this new agricultural-industrial undertaking.

Tung trees have thrived for thousands of years in the Yangtze River Valley area of China. That's in about the same latitude as the area that extends along the Gulf from Jacksonville, Florida, to the eastern part of Texas. This Gulf Coast region has about the same temperature, rainfall, and other climatic factors that have aided the Chinese in the production of tung oil in their country. There are scattered plantings of tung trees growing in a belt about 150 miles wide and more than 800 miles long, and the belt is slowly expanding all the time. Much of the cut-over pine land in the Gulf Coast region seems to be satisfactory for the production of tung trees but some, of course, is not. The major limiting factor is cold weather. Tung tree blossoms are very sensitive to frost and late cold snaps that catch the trees in bloom often do serious damage to that season's crop. But scientists in the Bureau of Plant Industry are working on this and other agronomic problems of the tung tree, and scientists of the Bureau of Chemistry and Engineering are working on the chemical and technological processing problems. As a result of this concentrated cooperative effort it is reasonable to assume that we will eventually have a great deal of constructive information to guide us in the further development of this young industry.

Tung oil is just one of a number of important vegetable oils that are now produced in this country. Vegetable oils are not only valuable in the development of people and in the commerce of nations, but they are the source of considerable income to the people who produce the crops from which the oils are made. Because it is a drying oil and has other valuable properties it is widely used in the manufacture of paint and varnish, as well as in the production of other industrial products, such as automobile brake linings, insulating materials for electric motors, linoleum, oilcloth, and so on. Tung oil plays such an important part in the manufacture of certain products in this country that we would be greatly inconvenienced should our imports be cut off. It was to get around this import situation which is steadily growing worse on account of wars, as well as to aid farmers in the Gulf Coast area in the development of another cash crop that caused Congress to appropriate money for research on tung oil problems.

As a result of this appropriation there are now four Department of Agriculture tung oil laboratories in the tung belt. These are located at Gainesville, Florida, Cairo, Georgia, Fairhope, Alabama, and Bogalusa, Louisiana. The Bureau of Plant Industry carries on the agronomic investigations which pertain to the trees and embraces such things

Above—Dr. Knight examining tung fruit dried in one of the new type ventilating barns.

Left—Tung fruit drops to the ground on maturity but the large moisture content must be well removed before the fruit is dry enough for hulling and milling.

as plantings, varieties, cultivation, fertilizers, harvesting the nuts, breeding to develop more productive varieties, methods of propagation and so on. The other part of the investigation pertains to the processing of the oil. It deals with the tung fruit and nuts after they have been harvested, and will study the content and characteristics of the oil produced under the various agronomic conditions as well as the utilization of tung oil and its byproducts. This part of the research, which is purely chemical and technological, is being carried out by the Bureau of Agricultural Chemistry and Engineering. The research of these two agencies is carried on in the closest cooperation, each supplementing the work of the other.

A representative of the Bureau of Agricultural Chemistry and Engineering has just returned from a survey of the situation in the tung belt. His report is encouraging. The crop that was produced in 1940 and is now being milled is the largest by far that has ever been produced in this country, despite the damaging cold wave of the winter and spring of 1939-40. But the estimated production of 5 million pounds of oil now being processed from last year's crop is not a drop in the bucket compared with the 75 million or more pounds that we import annually. Imports in 1939 amounted to 79 million pounds, and consumption that year to about a hundred million pounds, so we had to draw on reserve stocks to meet the situation. It may be a long time before we get American production of tung oil up to a hundred million pounds a year, but that will have to be our goal unless we develop other drying oils if we expect to be independent.

The commercial production of tung oil in the United States has been about as follows:

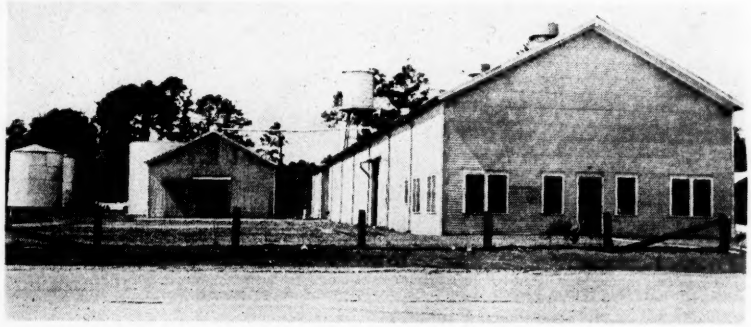
	Pounds
1932	100,000
1933	.....
1934	500,000
1935	.....
1936	2,000,000
1937	500,000
1938	3,000,000
1939	750,000
1940	5,000,000 (Estimated)

A new ventilating barn now being used for the natural drying of tung fruit. A small mesh wire keeps the fruit in place while air circulates from all sides and underneath.

Farmers this year are getting an average of about $60 a ton for the dried tung fruit delivered at the mills. That's double the amount they received some years, and is more, in most instances, than the returns from cotton on similar land.

Commercial plantings like those of Bennett's near Gainesville, Florida; Crosby's and Rowland's near Picayune, Mississippi; and Goodyear's and Green's near Bogalusa, Louisiana, which receive good care and treatment, appear to be doing well. But the production of tung fruit isn't confined to the large commercial groves. Hundreds of small farmers in the 6 tung producing states in the South are beginning to benefit from this new cash crop which is being produced for industrial purposes. For example, D. S. Fendley, a farmer and well contractor near Picayune, Mississippi, received $187.15 this year for tung fruit produced from trees planted along fence rows on his farm. The income from his tung trees more than paid the annual installment of $139 on the 40-acre farm he is buying. These trees were planted several years ago by the former owner of the farm. Tung trees begin to bear when they are 3 or 4 years old and come into full bearing about the sixth year.

A modern tung oil mill erected near Gainesville, Florida. Mills cost from $25,000 up and require about half a dozen men to operate it.



The agronomists of the Bureau of Plant Industry say that experience has shown that tung trees, like all other trees, respond to good soil, and that it is not advisable to attempt to grow a tung orchard on poor soil. Tung trees grow on a variety of soils, provided they are not alkaline or wet; but apparently for best results the soil should be slightly acid, fertile, deep, and well drained and should contain plenty of organic matter. Apparently the best soil is one having a sandy loam surface and underlain with a well drained and aerated permeable clay subsoil at a depth of 2 to 3 feet. Among the better drained soil types that have given good results are the Orangeburg, Greenville, Red Bay, Tifton, Norfolk, Ruston, and related sandy loams and fine sandy loams. The deep Norfolk sands, Susquehanna and Bladen clays, and soils of the Leon, Caddo, Coxville, and related series cannot be expected to grow tung trees successfully. Infertile and unadapted soil only results in a poor orchard and high production costs which cannot be readily, if ever, overcome.

There are now 6 tung oil mills in the Bogalusa territory and 4 in the Gainesville area, or a total of 10 mills in the United States. Others will probably be added as needed to take care of the expanding production. Some of these mills are owned by paint companies, some by individuals, and some by cooperatives, but all seem to be doing very well. It costs $25,000 or more to put up a tung oil mill, and requires about a half dozen persons to operate it. The mills usually operate on a 24 hour basis from the

(*Continued on page* 64)

South's Construction Up for Five-Month Period

Pace Previously Set is Maintained Approximately by May Awards

by

S. A. Lauver
News Editor

SOUTHERN construction with contracts during May valued at $117,338,000 in the sixteen States below the Mason and Dixon line raised the five-month aggregate to $762,293,000, a figure higher than any other record previously set for a comparable period.

Newly initiated construction in the South this year has reached large proportions. The record is more than a hundred and fifty million dollars higher than it was at the same time last year, during which an accelerating public construction program carried the annual total to an all-time high.

The $117,338,000 total for May was more than twice the figure for the same month of last year. However, it was a slight decline from the April total, although private building and industrial work and road contracts did much to bolster the May figure in face of slackened public building activity.

Industrial contracts made a forty-five per cent gain in May as compared with April. The total of industrial contracts, as tabulated from reports in the daily issue of Construction was $44,238,000. The increase in road and bridge contracts was over one hundred per cent, with private building showing an encouraging rise of over thirty-two per cent.

Heading the list of industrial awards was the $3,500,000 tin smelter to be built at Texas City, Texas, under a contract signed with the Tin Processing Corp. A Shell Oil project at Deer Park, Texas, involves construction of an additional refinery, which will raise the investment at that point to $1,000,000.

Construction proceeded on many already initiated national defense plants, such as the $10,000,000 bomber assembly factories at Fort Worth, Kansas City and Tulsa. It was in connection with this latter project that a $2,488,000 contract was let for the huge tonnage of structural steel needed in its erection.

Among the industrial contracts which were not in what might be termed defense production fields were a $125,000 furniture factory at Mobile, Ala., for Southern Furniture Co.; a $250,000 expansion program at Sylva, N. C., where Sylva Paperboard Co. is increasing its capacity by approximately sixty per cent, and a $125,000 factory for the Ajax Corrugated Paper Co., St. Louis, Mo. Southern Kraft Corp., is reported to be planning a $2,000,000 expansion at its $8,000,000 Georgetown, S. C., mill.

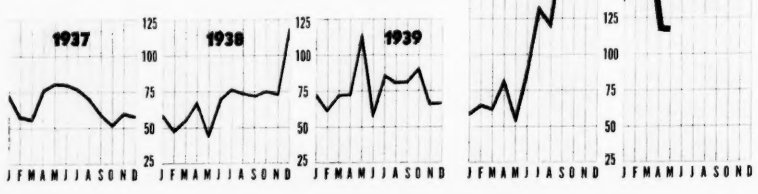
Memphis Natural Gas Co., Memphis, Tenn., proposes to start work by July on a welded pipeline from Monroe, La. The line will loop 55 miles through four States and will include a 600-horsepower compressor station. Southern Natural Gas Co., of Birmingham, Ala., proposed a $4,497,000 program including compressors to cost $1,617,000 and 125 miles of pipeline to be laid at a cost of $2,800,000. A 100-mile pipeline is planned by W. R. Davis, Inc., of Brownsville, Texas.

Definite announcement was made early in the month that E. I. du Pont de Nemours & Co. would erect a previously rumored neoprene synthetic rubber plant at Louisville, Ky. The project is reported to involve a $15,000,000 expenditure. B. F. Goodrich Co. made known plans for a plant at Louisville to turn out Koroseal, a synthetic thermolastic material.

Several utilities were prominently featured in the news as proposing large additions to plant facilities. Southern Bell Telephone & Telegraph Co. is to spend approximately $6,000,000 for constructing and revising Florida communication apparatus. Arkansas Power & Light Co., Little Rock, Ark., received permission to construct a $3,000,000, 30,000-kilowatt steam plant in the sour gas fields of southwest Arkansas.

Sheffield Steel Corp. announced a $1,000,000 expansion program at its Kansas City, Mo. plant. This organization is now carrying out a $17,000,000 project at a 593-acre site on the Houston, Texas ship channel. Another Texas metal plant is proposed by American Smelting and Refining Co. It will cost $5,200,000, will be located at Corpus Christi and will engage in electrolytic

Southern Construction Trends 1937-1941



zinc refining operations. Engineering and Research Corp., Riverdale, Md., opened bids for buildings under a $201,000 program.

Developments in the aircraft field included the $1,673,000 earmarked for a new plant under construction for Curtiss-Wright Corp., at St. Louis, Mo., a $500,000 allotment for the McDonnell Aircraft Corp. in the same city, and a $100,000 program at the new Garland, Texas plant of Southern Aircraft Corp.

Many Southern railroads were particularly active in taking steps to meet increasing requirements for rolling stock. Southern Railway placed three orders totaling $12,275,000 for 8,025 freight cars and 25 baggage-express cars. Missouri Pacific was authorized by Federal Court to spend $6,457,090 for improvements. Of the amount, $2,744,440 is for new rail and accessories. Missouri Pacific's 1942 requirements will include 1,000 box cars and 70 hoppers.

Purchase of 2,095 freight cars and 20 passenger coaches is expected to cost Chesapeake & Ohio Railway $5,100,000, as outlined in an application to the Interstate Commerce Commission. Nashville, Chattanooga & St. Louis Railway is to spend $5,000,000 for new mobile equipment. A thousand freight cars, 10 steel passenger cars and 16 locomotives are to be part of the purchase. Six of the locomotives will be diesel switch engines.

Louisville & Nashville Railroad Co. applied for Interstate Commerce Commission permission to issue $4,970,000 equipment trust certificates in connection with purchase of 1,000 coal cars and 1,100 freight cars. Kansas City Southern Railway was authorized to buy 50 auto cars, two diesel-electric passenger locomotives and one diesel switching engine. Atlantic Coast Line placed an order for 800 box cars and a Norfolk & Western contract covered 25 drop end gondolas.

Industrial

(Industrial, Electric Railways, Railroads, Buses, Telephones, Docks, Steamships)

	May 1941 Contracts Awarded	May 1941 Contracts to be Awarded	Contracts Awarded First Five Months 1941
Alabama	$6,348,000	$44,556,000	$99,154,000
Arkansas	50,000	750,000	407,000
Dist. of Col.	1,259,000	637,000	1,868,000
Florida	1,303,000	44,663,000	4,480,000
Georgia	1,832,000	47,092,000	14,038,000
Kentucky	896,000	48,571,000	32,422,000
Louisiana	4,383,000	45,298,000	19,246,000
Maryland	495,000	618,000	24,857,000
Mississippi	3,941,000	45,493,000	5,783,000
Missouri	1,339,000	99,374,000	28,377,000
N. Carolina	4,722,000	44,495,000	7,793,000
Oklahoma	2,801,000	80,000	13,360,000
S. Carolina	3,196,000	45,070,000	4,590,000
Tennessee	4,246,000	45,369,000	39,122,000
Texas	4,770,000	8,171,000	62,330,000
Virginia	1,615,000	2,034,000	6,870,000
W. Virginia	1,042,000	693,000	29,512,000
TOTAL	$44,238,000	$522,964,000	$394,209,000

Statistics of South's Construction

	May 1941 Contracts Awarded	May 1941 Contracts to be Awarded	Contracts Awarded First Five Months 1941	Contracts Awarded First Five Months 1940
PRIVATE CONSTRUCTION BUILDING				
Assembly (Churches, Theatres, Auditoriums, Fraternal)	$1,997,000	$5,033,000	$8,739,000	$7,130,000
Commercial (Stores, Restaurants, Filling Stations, Garages)	3,166,000	1,646,000	11,520,000	13,756,000
Residential (Apartments, Hotels, Dwellings)	8,086,000	3,713,000	10,758,000	12,832,000
Office	3,817,000	1,720,000	5,802,000	3,114,000
	$17,066,000	$10,112,000	$67,019,000	$66,852,000
INDUSTRIAL	$44,238,000	$522,964,000	$394,209,000	$66,769,000
PUBLIC CONSTRUCTION BUILDING				
City, County, State, Federal	$8,750,000	$88,870,000	$141,160,000	$37,052,000
Housing	10,129,000	20,450,000	64,078,000	35,757,000
Schools	1,700,000	4,493,000	10,829,000	9,360,000
	$30,579,000	$113,813,000	$216,067,000	$82,169,000
ENGINEERING				
Dams, Drainage, Earthwork, Airports	[illegible]771,000	$45,855,000	$27,318,000	$21,414,000
Federal, County, Municipal Electric	2,216,000	8,440,000	13,002,000	23,956,000
Sewers and Waterworks	693,000	6,969,000	7,137,000	3,834,000
	$8,680,000	$61,264,000	$47,517,000	$49,204,000
ROADS, STREETS AND BRIDGES	$ [illegible]775,000	$54,140,000	$53,655,000	$57,918,000
TOTAL	$117,338,000	$762,293,000	$778,467,000	$322,912,000

South's Construction by States

(By States)

	May 1941 Contracts Awarded	May 1941 Contracts to be Awarded	Contracts Awarded First Five Months 1941	Contracts Awarded First Five Months 1940
Alabama	$9,981,000	$69,281,000	$118,639,000	$17,057,000
Arkansas	2,320,000	5,595,000	15,020,000	5,919,000
District of Columbia	3,460,000	11,732,000	27,041,000	21,180,000
Florida	12,757,000	55,601,000	40,736,000	36,518,000
Georgia	3,886,000	53,570,000	44,210,000	18,323,000
Kentucky	1,698,000	19,546,000	38,850,000	12,245,000
Louisiana	10,553,000	49,531,000	46,401,000	22,295,000
Maryland	7,048,000	41,825,000	55,315,000	26,847,000
Mississippi	5,680,000	19,633,000	15,759,000	10,920,000
Missouri	5,202,000	102,942,000	41,480,000	24,679,000
North Carolina	6,770,000	57,677,000	51,300,000	9,381,000
Oklahoma	4,086,000	23,452,000	18,524,000	7,061,000
South Carolina	6,572,000	16,967,000	27,392,000	8,293,000
Tennessee	9,051,000	48,584,000	52,186,000	22,405,000
Texas	20,049,000	81,527,000	121,652,000	55,193,000
Virginia	6,555,000	12,522,000	28,640,000	15,221,000
West Virginia	1,670,000	2,288,000	35,322,000	9,372,000
	$117,338,000	$762,293,000	$778,467,000	$322,912,000

Public Building

(City, County, Federal; Housing; Schools)

	May 1941 Contracts Awarded	May 1941 Contracts to be Awarded	Contracts Awarded First Five Months 1941
Alabama	$2,586,000	$24,230,000	$14,251,000
Arkansas	293,000	1,112,000	817,000
Dist. of Col.	1,450,000	570,000	11,891,000
Florida	8,097,000	2,885,000	21,527,000
Georgia	1,124,000	4,093,000	25,291,000
Kentucky	188,00	70,000	2,024,000
Louisiana	3,301,000	685,000	17,439,000
Maryland	2,872,000	5,377,000	14,438,000
Mississippi	724,000	3,265,000	5,953,000
Missouri	1,632,000	2,870,000	6,537,000
N. Carolina	1,213,000	11,610,000	34,842,000
Oklahoma	15,000	16,300,000	3,255,000
S. Carolina	1,046,000	565,000	14,991,000
Tennessee	249,000	1,825,000	2,611,000
Texas	2,002,000	28,521,000	24,630,000
Virginia	3,777,000	9,780,000	12,955,000
W. Virginia	10,000	25,000	2,615,000
TOTAL	$30,579,000	$113,813,000	$216,067,000

Roads, Streets and Bridges

(Roads, Streets, Paving, Viaducts)

	May 1941 Contracts Awarded	May 1941 Contracts to be Awarded	Contracts Awarded First Five Months 1941
Alabama	$719,000	$85,000	$2,125,000
Arkansas	717,000	250,000	914,000
Dist. of Col.	209,000	9,695,000	738,000
Florida	92,000	4,230,000	1,492,000
Georgia	55,000	50,000	464,000
Kentucky	549,000	675,000	3,586,000
Louisiana	2,276,000	375,000	6,282,000
Maryland	204,000	33,810,000	2,088,000
Mississippi	644,000	100,000	2,771,000
Missouri	1,460,000	45,000	2,665,000
N. Carolina	.....	345,000	3,581,000
Oklahoma	649,000	35,000	887,000
S. Carolina	2,014,000	650,000	4,389,000
Tennessee	2,520,000	475,000	3,411,000
Texas	3,721,000	1,545,000	11,698,000
Virginia	501,000	275,000	4,781,000
W. Virginia	355,000	1,500,000	1,783,000
TOTAL	$16,775,000	$54,140,000	$53,655,000

Private Building

(Assembly, Commercial, Residential, Office)

	May 1941 Contracts Awarded	May 1941 Contracts to be Awarded	Contracts Awarded First Five Months 1941
Alabama	$164,000	.....	$1,736,000
Arkansas	50,000	$120,000	164,000
Dist. of Col.	500,0000	670,000	10,065,000
Florida	3,035,000	2,185,000	10,927,000
Georgia	875,000	1,985,000	3,623,000
Kentucky	65,000	25,000	65,000
Louisiana	185,000	534,000	1,870,000
Maryland	3,188,000	840,000	12,317,000
Mississippi	291,000	120,000	930,000
Missouri	596,000	210,000	2,866,000
N. Carolina	592,000	602,000	2,659,000
Oklahoma	62,000	45,000	112,000
S. Carolina	244,000	95,000	1,016,000
Tennessee	85,000	25,000	1,093,000
Texas	6,257,000	2,243,000	14,248,000
Virginia	572,000	378,000	3,004,000
W. Virginia	235,000	25,000	321,000
TOTAL	$17,066,000	$10,112,000	$67,019,000

Public Engineering

(Dams, Drainage, Sewers, Waterworks, Etc.)

	May 1941 Contracts Awarded	May 1941 Contracts to be Awarded	Contracts Awarded First Five Months 1941
Alabama	$161,000	$410,000	$1,373,000
Arkansas	1,210,000	3,363,000	12,718,000
Dist. of Col.	12,000	160,000	2,479,000
Florida	230,000	1,638,000	2,310,000
Georgia	.....	350,000	794,000
Kentucky	.....	205,000	753,000
Louisiana	408,000	2,639,000	1,561,000
Maryland	289,000	1,180,000	1,615,000
Mississippi	80,000	645,000	322,000
Missouri	175,000	443,000	1,035,000
N. Carolina	243,00	595,000	2,125,000
Oklahoma	559,000	7,012,000	910,000
S. Carolina	72,000	587,000	2,406,000
Tennessee	1,951,000	890,000	5,949,000
Texas	3,229,000	11,017,000	8,746,000
Virginia	.....	55,000	1,030,000
W. Virginia	28,000	45,000	1,088,000
TOTAL	$8,680,000	$61,264,000	$47,517,000

$37,871,000,000 for Defense Authorized by Congress

Naval vessels, merchant ships, and land transportation equipment will take the largest single share of the $37,871,000,000 appropriated and authorized by Congress since June 1940 for national defense, a compilation by the OPM Bureau of Research and Statistics disclosed. The tabulation is carried to May 17. Authorized expenditures for the fiscal years 1941 and 1942 amount to $8,963,000,000.

Ordnance equipment, such as guns, ammunition, and other munitions, have been allocated $7,414,000,000. Military aircraft and accessories account for $6,509,000,000.

New industrial facilities financed by the Government will absorb $3,772,000,000. Other allocations are: military posts, depots, fortifications, and defense housing, $3,420,000,000; other Army and Navy equipment, $1,778,000,000; miscellaneous, including pay, subsistence, and purchase of imported materials, $6,015,000,000.

An explanation of the cost of armaments may be found in the following examples:

A 35,000-ton battleship, such as the U.S.S. North Carolina and the U.S.S. Washington, costs $70 million. It takes $50 million to build an aircraft carrier, $20 to $30 million for a cruiser, $8 million for a destroyer, and $6 million for a submarine.

After these maritime fortresses are built, they are expensive to maintain.

For instance, it cost $900—about the price of a small family car—to fire a 14-inch gun from a battleship. And there are 124 guns in the fleet with more scheduled for the two-ocean Navy. A 16-inch gun costs $1,600 to fire.

Aircraft is not so expensive, but it takes more of planes than ships to arm the United States. Yet a 4-engine bomber, complete with spare parts, costs close to half a million.

Tanks are less expensive, but the prices are many times the cost of the family auto. The Army pays from $27,000 for a light tank, to $67,000 for a medium tank, and $114,000 for a heavy-tank and puts the guns on afterwards.

Out of the $37.3 billion the Army will get $13.1, the Navy $13.1, and Lease-Lend, $7. Other U. S. defense agencies will share $2.3 billion, while Government lending agencies will distribute $1.8 billion.

Contract awards on May 1 amounted to $15.2 billion. The Army and Navy accounted for $13.6 billion and other defense agencies for $1.6 billion. British orders of $3.7 billion brought total orders to $18.9 billion. Cash payments amounted to only $5.1 billion dollars on the same date.

This is how the $5.1 billion was disbursed:

	Millions of dollars
Naval Ships	621
Aircraft	605
Ordnance	501
Stations, Bases, Fortifications, etc.	1,104
Industrial Facilities	305
Other Materials, Equipment and Construction	1,100
Pay rolls	864
Total	5,100

The total present program for national defense expenditures amounts to over $41 billion. That is about $310 for every man, woman, and child in the United States. It includes a pending War Department supply bill of about $3.6 billion and urgency deficiency appropriations of $165 million for defense housing and $540,000 for a patrol harbor at Bodega, California.

Southern Railway Finances

At the annual meeting of the stockholders of the Southern Railway Company held in Richmond last month President Ernest E. Norris made the following announcement concerning the final payment on May 15th, 1941, of the company's indebtedness to the Reconstruction Finance Corporation: "Between the years of 1932 and 1938 inclusive, the company borrowed from R. F. C. an aggregate of $31,405,000. Substantial repayments from time to time reduced this indebtedness to $11,000,000 as of May 1st this year, which bore interest at the rate of 4% per annum." "We arranged to borrow $10,000,000 from a group of five New York banks and one Chicago bank, which, together with $1,000,000 from the company's treasury, was paid to the R. F. C. on May 15th, 1941, thus completely paying off our depression-incurred debt to that corporation."

The bank loan is repayable in quarterly installments beginning August 15th of this year and concluding on May 15th, 1944. It is secured by a part of the collateral which was pledged with the R. F. C. and also 3,240 shares of capital stock of South-Western Construction Company. The interest rates on the notes given to the banks vary from 2% for the earliest maturities to 3-3/8% for the last two maturities the company has the right to anticipate payment of any of the maturities.

The company will save in interest from this arrangement a total of $149,218 or $50,000 per annum, as contrasted with what it would have paid the R. F. C. following a similar program of curtailment."

John S. Bryan, Oliver Iselin, Gerrish H. Milliken and John K. Ottley, whose terms expire in 1941, were re-elected directors for a further term of three years.

New Bleaching Process for Cotton Goods

A new bleaching process for cotton goods, that is of special interest at this time because it will facilitate the production of the vast quantities of fabrics now being purchased by the government in the national defense program, was announced last month by G. P. Vincent, of the Mathieson Alkali Works, Inc., at a meeting of the Rhode Island Section of the American Association of Textile Chemists and Colorists.

"The new process makes possible the production of bleached cotton goods that are superior in strength to anything that is obtained by the customary method of bleaching," stated Mr. Vincent. "It also makes unnecessary the careful control of time, temperature, and concentration that bleaching has heretofore required in order to prevent damage to the fibers. It is therefore easier to meet the federal specifications for sheeting and similar products purchased by the government, since the desired whiteness can be obtained without any danger of loss of strength.

"The new process can be carried out in existing equipment and without radical changes in procedure," Mr. Vincent said. "The generally used bleaching agent, hypochlorite, is also employed, but to it is added sodium chlorite, in a form known as Textone, which is the new bleaching agent recently developed by the Mathieson organization."

The effect of the addition of Textone is to alter the chemical reactions of the hypochlorite. A new product (probably chlorine dioxide) is formed, which bleaches without injuring the fibers in any way.

The new process has been tried out in a number of cotton bleaching plants and is now ready for use in quantity production.

Arkansas' Aims for Industrial Development

by

Hon. HOMER M. ATKINS
Governor of Arkansas

SINCE the beginning of Arkansas' economic history, the bulk of production from farms, forests, and mines has been shipped to other regions of the nation for processing so that these resources could be returned to the state for resale—at a price which had to include high freight rates, processing costs, handling charges, and profit.

If Arkansas is to move forward at a speed commensurate with the increased production of her natural resources, it is going to be necessary to process more and more of these raw materials here at home for local consumption and for exporting. The time has come when our people are awakening to the possibility of development along these lines; we can see the dawn of a new day for Arkansas. But there is broad groundwork to be accomplished before any sizable industrial objectives can be achieved.

First, every effort is going to be made to develop small processing plants which do not require outside capital. Such types of development would include canning plants for fruits, vegetables, and soy beans; packing plants for meat and poultry; as well as quick freeze plants.

An outstanding development in these types of home processing plants is found in Wisconsin—a famous dairying state. It is a fact that Wisconsin has added more than $10,000,000 to her annual income through local processing of butter, cheese and milk products. Yet Arkansas, a state with equal natural conditions for a thriving dairying business, has added less than $300,000 to these same dairy products. Also, Minnesota has added more than $2,000,000 to its annual income through processing poultry and poultry products Arkansas is also perfectly suited for the development of the poultry industry.

Second, the development of electrical power must be rushed. We are now importing 60% of the electric power we consume. Because President Roosevelt manifested great interest in Arkansas and stated that he would like to establish power development projects similar to the T.V.A. in the White, Arkansas, and Ouachita river basins—it is to be hoped that the Arkansas Valley Authority bill now before the House will be approved so that construction work on the flood control and power dams can begin as soon as possible.

Third, concerted and continuous effort will be made to adjust the tariff and freight rates which handicap the movement of raw resources and finished products in and out of Arkansas.

Broad development along these three lines, plus the recently enacted Workmans Compensation Law should go a long way toward making investment in Arkansas attractive to outside capital.

A further development of Arkansas' most decentralized industry—tourism will be pushed so that Arkansas can continue its thriving business from travelers. In conjunction with attracting more tourists into our state, consideration is being given to the organization of the isolated craftsmen in the hills and plains. An effort will be made to enable these skilled persons to sell their handiwork to the tourists in Arkansas through an organization which might be called the Arkansas Craftsmen Guild. Such an organization would collect the trinkets and novelties from the isolated craftsmen, credit the craftsman with the articles, then distribute them to the proper points having sales-appeal to the tourists.

For the benefit of Arkansas farmers, tentative plans include the organization of farm cooperatives through the federal Farm Security Administration. These cooperatives would serve to finance crops, provide supervision, establish market centers, stabilize the production of truck farming, and guarantee regular produce for trucking lines out of the larger markets such as St. Louis, Kansas City, Memphis, and Chicago.

Further, by all possible support of the farm Extension Service, the state will encourage the expansion of producing livestock to supplement farm incomes. Continued emphasis will be given the annual Arkansas Livestock

(Continued on page 53)

The accompanying article was written at the invitation of the* MANUFACTURERS RECORD *so that Arkansas' new Governor might present his attitude toward industry. In making public these views, the* MANUFACTURERS RECORD *feels it is necessary to state that we do not agree with all the Governor says. We heartily endorse his belief in the need for his state's industrial development and will do all we can to help therein, but his support of the proposed Arkansas Valley Authority as a means of producing cheap electric power to attract industry and his recommendation of Federal assistance in establishing farm cooperatives we are totally in disagreement with. The* MANUFACTURERS RECORD *believes that production of electricity by the Federal Government means outright competition with private enterprise. It means the taxpayers of the entire country must shoulder the financial burden of a project from which a relatively few of the taxpayers will derive benefit, and those only in a limited area. Finally, though much is said about government production of cheap electricity, so far no adequate yardstick has been established in order to gauge actual cost of production. On the subject of utilizing Federal assistance for farm cooperatives we believe that this is not only furthering the present tendency of dependence upon Federal patrimony but also it is an outright infringement of states rights.—Editor.

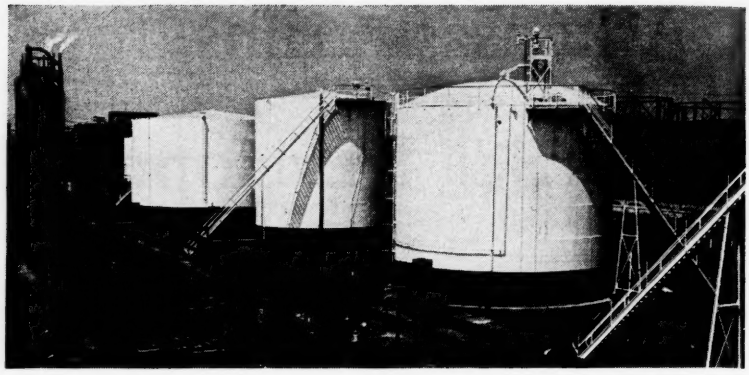
Reynolds Metals Starts Aluminum Production at Muscle Shoals

The successful production of aluminum at Muscle Shoals, Alabama, was announced by R. S. Reynolds, president of the Reynolds Metals Company. First test runs in the Lister, Alabama, aluminum plant of the Reynolds company were completed Sunday, May 18th, marking the production of this light weight metal within a day less than six months after the ground was broken for the factory. The first work on the site began November 20, 1940. The Alabama plant produces alumina from bauxite, and further reduces the alumina to pure aluminum. When the plant is in production it will turn out 40,000,000 pounds of pure aluminum each year. In addition to the aluminum plant at Lister, the Reynolds company is building a plant at Longview, Washington, where a production of more than 60,000,000 pounds of aluminum will be produced annually.

"The success of the Lister plant is a milestone in the progress of the nation toward proper production for National Defense," Mr. Reynolds said. "We are proud that our organization has been able to step into the gap and aid in increasing the supply of this all-essential metal."

The Reynolds company for some years has occupied a dominant position in the aluminum fabricating field, being the largest producers of thin-gauge (foil) in the country and one of the largest in the world. "It was only natural that the company should expand into other aluminum production as the emergency became apparent," Mr. Reynolds said. "At Louisville we have eight factories engaged in processing aluminum, producing aluminum parts, shapes and extruded parts for the national defense campaign. More than 3500 men are employed in our Louisville plants alone, with a majority of the thirty plants now owned or operated by the Reynolds company devoting a larger portion of their production to National Defense needs."

No estimate was made as to the date when the Alabama plant would be in full production, but in line with previous construction and operating records it was thought that capacity would be reached during the month of July.



"Defense" Paint Developed to Replace Vital Aluminum Paint

With supplies of aluminum paint cut off by priorities for all uses except those which are strictly military, American chemists already have found an acceptable substitute to paint the huge tanks of the petroleum industry. The photo shows the first tanks coated with the new paint at the Point Breeze, Philadelphia refinery of the Atlantic Refining Company. The paint was designed to reflect light and heat waves and stand up under local climatic conditions as effectively as aluminum paint.

Savings Bonds For Financing the Defense Program

A letter from the Secretary of the Treasury of the United States reads as follows:

"On May 1st we inaugurated a carefully considered plan for enlisting the savings of the American people in the task of financing the National Defense Program.

"Defense Savings Bonds and Stamps are now on sale in post offices and banks throughout the United States.

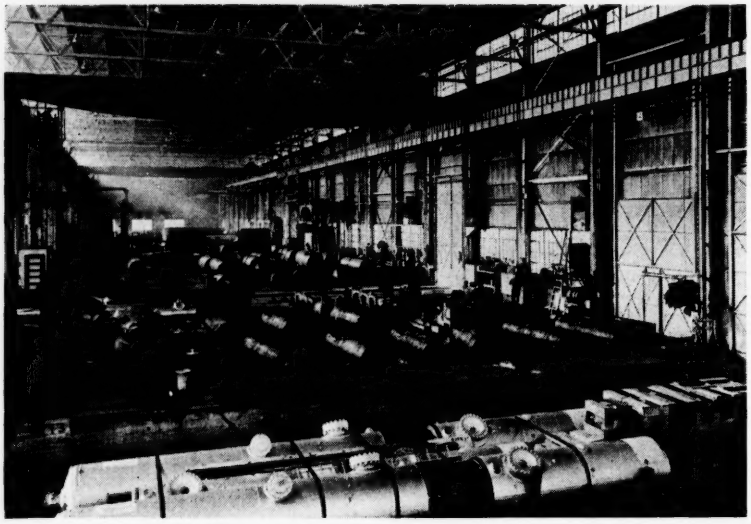
"It is important that the Treasury Department reach—as often as possible—every home in the United States with information about these government obligations.

"Through your newspaper, your assistance will be invaluable in our efforts to do this on a continuing basis. We should like to come to you from time to time with specific requests for cooperation."

A concern of business men is whether America can avoid the dreaded evil of inflation, and the attendant damage wrought in other countries as currency was debased and all sense of real values disappeared. One of the steps to avoid such a condition of affairs here is to invest savings in government bonds.

Rapidly mounting incomes make the temptation to indulge in needless spending difficult to resist. This raises the price of commodities despite effort to hold them in check. As prices go up, purchasing power or the value of the dollar go down. Investment in the securities now offered by government is wise from every standpoint.

Heavy oil machinery plants such as this one of Black, Sivalls & Bryson, Inc., Oklahoma City, offer a bulwark to the defense production of the nation. Picture shows the north bay of steel shop with X-Ray machine in left foreground.



DuPont Investments in South to Exceed $210,000,000

Evidence of the South's new place as a world chemical center is the estimate that the Du Pont Company's investments below the Mason and Dixon Line will exceed $210,000,000 in the near future.

These investments, which comprise plants and operating capital, are designated as "permanent commercial enterprises."

In 1930, the total in the South was less than $83,000,000. More than $107,000,000 was added during the past decade. About $20,000,000 is being expended this year or has been authorized for new plants and additions.

Largest of the company's new undertakings in the South are a nylon plant at Martinsville, Va., and important additions being made to its synthetic ammonia plant at Belle, W. Va.

Current commercial operations embrace fifteen plants in eight southern states. They now furnish jobs to 15,000 men and women in their operating forces. Employment and payrolls, at present approximating $28,000,000 annually, apart from construction and other temporary activities, will be substantially increased as the new facilities being built or planned are completed.

The fifteen plants are exclusive of government-owned defense projects being built or operated by the company in the South, and also of the neoprene plant to be built with the company's own funds at Louisville, Ky. The defense plants include a powder factory at Memphis, now working at capacity, a second being erected at Childersburg, Ala., and an ammonia plant under construction at Morgantown, W. Va.

States in which commercial plants owned and operated by Du Pont are located are Virginia, Maryland, West Virginia, Tennessee, Kentucky, Alabama, Oklahoma and Texas. The largest investment is in Virginia, which is second only to New Jersey in the dollar value of the company's plant investments in any one state.

Among products the company manufactures in the South are titanium pigments in Maryland, "Cellophane" cellulose film and rayon in Virginia and Tennessee, and zinc, synthetic ammonia and related chemicals in West Virginia. Commercial explosives are made in Alabama, Kentucky, Oklahoma, West Virginia and Texas. Chemicals, such as chloride of zinc and sulphuric acid, are produced in Kentucky and West Virginia.

The new plant for large-scale manufacture of nylon being built at Martinsville, Va., will supplement facilities already in operation at Seaford, Del. Production at Martinsville is scheduled to start late this year, with the plant operating fully in 1942.

"Mild climate, accessibility to raw materials and markets, plentiful water, good transportation, the high character of wage-earners, and the favorable attitude of the South toward industry," are among the major reasons for Du Pont's growing interests in Southern territory for manufacturing purposes, according to Walter S. Carpenter, Jr., the company's president.

He estimated Du Pont's overall purchases of Southern raw materials in 1940 to have been in excess of $20,000,000, apart from purchases on government projects, and added that in terms of dollars, about 37 per cent of Du Pont's total commercial plant facilities are now located in Southern states.

"This development of new industry below the Mason and Dixon Line," said Mr. Carpenter, "is concrete evidence of the company's confidence in both the present and future of a great section of America which is splendidly endowed. The Du Pont interest in the South is of long standing. It has grown with closer acquaintance, and I fully expect it to keep on growing.

"The South's present importance industrially undoubtedly is only a beginning of the development yet to come within the lifetime of most of us."

Rayon Mill at Stanley, N. C. to be Modernized

Preliminary sketch machinery plans for the old Katterman and Mitchell mill at Stanley, N. C., recently acquired by W. J. Carter of Greensboro, N. C., and O. M. Gardner of Washington, D. C., and Shelby, N. C., are about ready, according to J. E. Sirrine & Company of Greenville, S. C., consulting and designing engineers, who were engaged to plan and supervise the construction of an additional large brick building as well as recondition the old one. The cost will be around $1,000,000. The mills will be operated as a carding and spinning plant for acetate rayon. For immediate use, the plans call for 15,000 spindles and the necessary auxiliary machinery, but the engineers will so lay out the plant that its capacity can be raised to 50,000 spindles when needed. The mill's entire production of acetate rayon yarn will be used by the organization's four rayon weaving units. When completed, the plant will employ about 300.

Contracts Awarded For 123 More Ships

Contracts for 123 vessels at an approximate cost of $312,000,000 were recently announced by the Maritime Commission. Cleared with the Office of Production Management, the contracts were for the standard designs developed in the Commission's long-range program with which shipbuilders have had extensive construction experience.

At the same time, the Commission announced contracts for eight shipways and other facilities costing approximately $6,000,000 to be used for construction of a portion of these ships.

The contracts awarded were:

For ships:

Yard	*No. and Type*
Ingalls Shipbuilding Corp.	
Pascagoula, Mississippi	6 C-3's
Federal Shipbuilding & Dry	
Dock Co., Kearny, N. J.	24 C-2's
Pennsylvania Shipyards, Inc.	
Beaumont, Texas	10 C-1's
Pusey & Jones Corp.	
Wilmington, Delaware	10 C-1's
Sun Shipbuilding & Dry	
Dock Co., Chester, Pa.	10 C-2's
Western Pipe and Steel Co.	
San Francisco, California ...	17 C-3's
Seattle-Tacoma Shipbuilding	
Corp., Tacoma, Wash.	30 C-3's
Moore Dry Dock Co.	
San Francisco, California ...	12 C-2's
Consolidated Steel Corp.	
Los Angeles, California	4 C-1's

J. B. Brantly of Atlantic Coast Line Passes Away

Throughout the territory served by the Atlantic Coast Line, the announcement of the death in Washington, D. C., on May 9 of J. B. Brantly, General Traffic Manager, has been received with deep regret.

Mr. Brantly was born in Macon, Georgia, in 1893. Educated in the public schools of Macon, he entered the Atlantic Coast Line service as a stenographer in the freight traffic department at Wilmington in 1911.

Serving first as Secretary to the fourth vice-president, and in various capacities in the office of the assistant general freight agent, Jacksonville, he was later commercial agent at Ocala, Florida, and also at Wilmington, N. C.

Progressing from assistant general freight agent, to which he was appointed in 1926, he became assistant to the vice-president in March 1930. He became assistant vice-president in May 1939, with later advances in June 1940, to the position of general traffic manager.

Construction at Armco's $17,000,000 Texas Subsidiary

When George M. Verity, chairman of The American Rolling Mill Company, thrust a 31-year-old silver spade into Texas earth in a 600 acre woodland site on the ship canal near Houston on May 27th, the open hearth department of the first large steel plant in the Southwest was officially begun. It adds a new basic industry to that region, and adds another strong link to national defense efforts.

The $17,000,000 plant which is being built by the Sheffield Steel corporation of Texas, an Armco subsidiary, is expected to get into operation early next year. General construction work on other sections of the plant was started several weeks ago.

Stating that the ground-breaking ceremonies brought back memories of a similar ceremony held 41 years ago in Middletown, Ohio, when the cornerstone of the first Armco plant was laid, Mr. Verity, dean of American steel executives, declared "even in our most optimistic dreams we did not then envision how far-reaching its manufacturing and commercial activities would become."

The Texas steel plant represents a substantial addition to the sinews of national defense, he said. "We have planned to build a plant of the most modern design possible without stinting in anything that would make for efficiency in manufacturing processes. We have planned to build a plant which will efficiently produce the things Texas needs, from raw material which are available in the area itself."

Other speakers at the ground-breaking were W. L. Batt, deputy administrator of the Office of Production Management, and Calvin Verity, Executive Vice President and General Manager of Armco.

Deputy Batt commented on the value of Texas' first steel plant to national defense. "We of the OPM look on such expansion in this part of the country with great satisfaction," he said. "These men are real pioneers. It takes courage and long vision to come this far away from the industrial section of the United States to establish a steel mill."

Calvin Verity declared that "The American Rolling Mill Company will put all of its strength back of our Sheffield group who are to build and operate this new plant. Nothing shall be left undone either in expediting construction or in making it equal to the metal consuming needs of this section."

The silver spade has been used in breaking ground for all important additions to Armco plants since 1910.

On a flying visit to the Sheffield Steel Corporation plant in Kansas City where the decision to add another open hearth furnace at that plant was made, the entire Armco board of directors continued on to Houston. They were greeted in Dallas by a large delegation of Houston business and professional men. Arriving at Houston, the party boarded boats, and proceeded to the site by way of the ship channel.

In the evening some 600 representative citizens of the Southwest attended a banquet at the Rice Hotel honoring the Armco and Sheffield officials.

Charles R. Hook, president of Armco, said that the plant was a permanent addition to the economic life of the Southwest. "It has as complete and compact an economic cycle as any manufacturing institution with which I am familiar," he declared. Raw materials from the area will be processed into useful goods, and returned to the areas. Approximately 80 cents out of every dollar spent will remain in the territory." Construction of the Texas plant will eliminate the long hauls of scrap to eastern and northern steel plants and the back-haul of finished products.

Using a process for making steel exclusively from scrap iron developed in 1918 by the Sheffield Steel Corporation which makes possible the operation of steel producing units distant from iron ore mines, the three open hearth furnaces of the Texas unit will produce 200,000 tons of ingots annually. As the site is of ample size, with about one mile of frontage on the Ship Channel, the plant has been designed to permit of further expansion as demand requires.

The Sheffield plant in Texas is unique in that it will be the only steel plant in the world built in a forest. Company officials insisted that as many as possible of the venerable oaks and pines which heavily studded the site be retained.

Westinghouse Training Men For Ordnance Plants

Keeping pace with construction work on two Navy ordnance plants at Louisville, Ky., and Canton, Ohio, is the training of the men who will make and assemble ordnance equipment in the plants. Selected by the Navy to build and operate the $5,000,000 Louisville plant and the $16,000,000 Canton plant, Westinghouse is conducting an extensive program to train many of the 3,000 mechanics, machine tool operators, supervisors and assembly men who will be employed on ordnance work.

Hundreds of workers are now being trained for these jobs by Westinghouse instructors in vocational schools, high schools and machine shops in the areas of the two plants. In the Louisville area men are being trained in the Ahrens Trade School, Dupont High School and in the manual training departments of many Kentucky high schools. The National Youth Administration likewise is helping by providing special instruction for young unemployed men.

Skilled mechanics hired in the Louisville and Canton sections are now receiving training in the Naval Gun Factory at Washington, D. C. This training is restricted to experienced mechanics who can do useful work in the gun factory while gaining experience on ordnance work.

In addition to training new employees, Westinghouse will send several hundred skilled mechanics from its various divisions to work in the Navy ordnance plants. However, most of the workers will be selected in the Canton and Louisville areas.

A Reader's Comment on Editorials Overlooks the Facts

Editor, MANUFACTURERS RECORD:

The May number of the RECORD has just come to my desk. There is something strangely inconsistent about the war editorial on the cover and the complaint about taxes within.

You know full well that convoys mean entry into another foreign war. You appear to favor paying for such an adventure, but are much opposed to spending any tax money at home.

A little more than twenty years ago America forsook its traditional policy and set out to correct the troubles of Europe. In soberer moments later, she decided "never again."

The Johnson law and neutrality act were written and passed. Both have been scrapped in another wave of hysteria whipped up by editorials such as the one referred to. If "we must see that they get there" why should we not "see that they are dropped on Berlin."

What this nation needs most right now is leaders with more sanity and less incendiarism.

Yours very truly,
VANDEVVER VOORHEES
May 12, 1941. Chicago, Ill.

Reader Voorhees overlooks the fact that there is no inconsistency with the two articles to which he refers. The plea in the tax article was to stop spending for non-essentials.

U. S. and British Defense Industrial Facility Commitments Exceed $3,000,000,000

The Government had committed itself by March 30 to pay for $1,915,000,000 of new factory facilities in building an "arsenal of democracy," the Office of Production Management announced recently. The money is being used to construct plants and machinery to turn out airplanes, guns, tanks, machine tools and other defense equipment.

The commitments of private industry to build such facilities for which Certificates of Necessity had been issued or were pending on March 15 totaled $977,000,000. This figure, however, does not take into account funds spent by private industry for defense plants for which Certificates of Necessity were not requested. Nor does it include the billions in established industrial facilities now busy on defense orders.

All commitments of the Government, plus private financing under Certificates of Necessity, total $2,892,000,000. If to this are added British commitments for plant facilities in the U. S. amounting to $191,000,000, the total reaches $3,083,000,000.

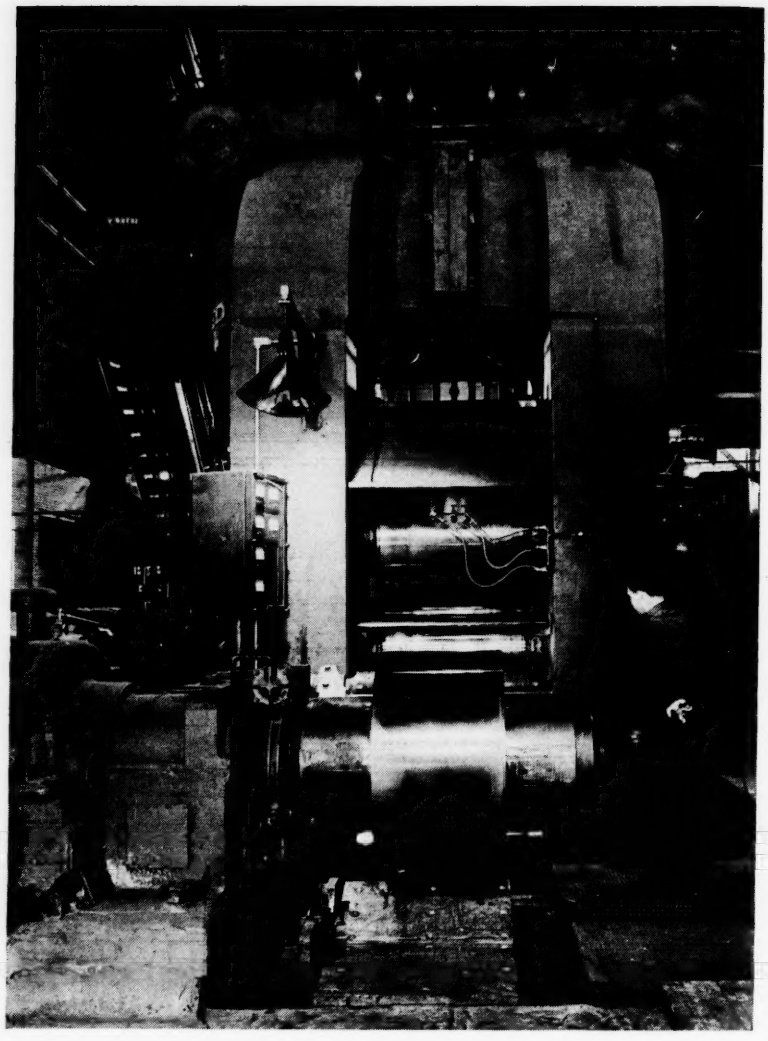
Omitting letters of intent, the compilation shows that 86 percent of the Government commitments for defense plants, or $1,412,000,000, is being spent directly upon government-owned plants, while 14 percent or $223,000,000, covers plant facility contracts.

The number of government financed plants as of March 31 was 331, and the average cost was $5,786,000. The number of privately financed plants was 904, and the average cost $729,000.

The following table shows departments by which commitments have been made, value of commitments, the estimated cost of privately financed facilities and British commitments:

Commitment by:	*Government Financed*	*Plant Facility Contracts*	
War Department	$625,352,958	$68,710,764	
Navy Department	399,760,682	89,448,606	
Defense Plant Corporation	386,529,153[1]		
Reconstruction Finance Corp. (authorized loans)		31,526,390	
Maritime Commission		33,374,500	
Total	$1,411,642,793	$223,060,260	
Total contracts commitments and loans		$1,634,703,053	
Letters of intent		280,573,785	
Total Government commitments		$1,915,276,838	66.2%
Privately financed facilities under certificates of necessity as of March 15, 1941 (estimated cost)		$ 977,000,000	33.8%
Total commitments—government and private		$2,892,276,838	100.0%
British commitments		$ 191,000,000	
Grand total		$3,083,276,838	

[1]Includes direct obligations of the War Department totaling $97,629,774 and of the Navy totaling $10,756,800.



Follansbee Steel Completes Modernization Program

The Follansbee Steel Corporation has completed a $1,270,000 modernization program at its Follansbee, W. Va., plant. Included were two new cold reducing mills and a temper mill (shown here), together with auxiliaries, and the reconstruction of buildings to house this modern equipment.

The extent and type of modern production facilities installed were decided on after a thorough consideration of the company's size and potential place in the steel industry.

With its new facilities, Follansbee Steel aims to maintain its place as an established producer of sheet and tin plate by keeping pace with modern production methods. At the same time, new equipment and a wider range of techniques make it possible for the company to expand its production of a number of specialties, including electrical sheets, seamless roll terne roofing and unusually heavy grades of tin and terne plate.

The company's list of products is further increased through its subsidiary, the Sheet Metal Specialty Company of Follansbee, West Virginia, which manufactures nested stove pipe, milk and ice cream cans and other dairyware items, and a variety of stampings.

New Methods and Equipment

Three New Low-Firing Porcelain Enamel Frits

Richard H. Turk, Executive Vice President of The Porcelain Enamel and Manufacturing Company, Baltimore, Md., announces the introduction of three new low-firing porcelain enamel frits, which are said to reduce firing temperatures at least 100 degrees Fahrenheit, thereby saving on fuel and enabling manufacturers to use lighter-gauge metals in the fabrication of their products. The new Pemco frits include a low-fire groundcote, covercote and a stainless, acid-resisting frit. The groundcote has been trade-named BONTITE and is said to offer unusual opportunities for increased production and savings on fuel. The new low-fire Pemco white covercote is known by the trade name of PARADOX because it gives high quality at low production costs, while RESISTAYN, the new Pemco stainless and acid-resisting frit embodies all production features of the groundcote, BONTITE, and the covercote, PARADOX, and in addition is acid-resisting and stainless. The company recently announced a complete series of Pemco trade-marked Porcelain Enamel Frits for finishing a wide range of products, including refrigerators, washing machines, heaters, corrugated sheets, architectural units, sinks, lavatories, and hot water tanks and signs.

Werner Introduces "Plastikmould" and "Plastiktrim"

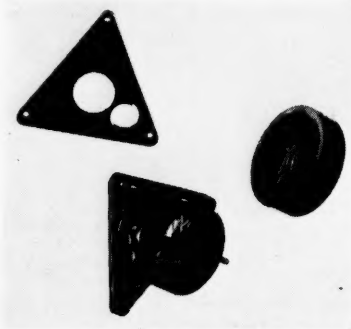
Due to priority demands of the National Defense Program, it is declared that the aluminum mills of America are unable to continue the supply of material to fabricators of aluminum products in the commercial fields. In view of this situation, R. D. Werner Company, Inc., New York City, finishers of extruded metal moulding, recently introduced a new line of plastic products under the trade names of "Plastikmould" and "Plastiktrim" which are manufactured in a wide range of colors in similar shapes and sizes as now supplied in aluminum. They are also made in rods, tubes, and other commercial items both flexible and rigid. P. C. Goodspeed, who has many years' experience with plastics, is in charge.

Towmotor Introduces All-Purpose Lift Truck

Following quick acceptance by plants, mills, docks, warehouses and terminals of its lift truck Model LT-40 for loads up to 3000 pounds, Towmotor Company, Cleveland, Ohio, has introduced a companion model, the LT-44, built along similar lines, but capable of lifting 4000 pounds at 15 inches from the carriage. The LT-44 Towmotor has a 44-inch wheelbase, with a turning radius of only 72 inches, and provides a range of lifting power and maneuverability sought in many fields because of over-crowded quarters. Its over-all width is 35 inches and over-all length, without forks, 74 inches.

Plastics Meet Exacting Tests

As the plastics industry expands and the uses of plastic materials become more widespread, certain new applications are noteworthy. One recent outstanding application is the E. Edelmann Company's plastic and glass Self Calculating Freeze-D-Tector hydrometer, in which plastics have provided new utility and strength for this testing apparatus while playing an important part in increasing the salability of the product.



The entire base, housing and cap of the correction table of the hydrometer were molded of special impact-resistant phenol formaldehyde Bakelite material to withstand rough handling encountered in daily use at filling station or garage. In addition to being impervious to oil, grease, acid and dirt, the plastic base unscrews easily to allow cleaning the float and jar and at the same time protect the vital glass float and thermometers against breakage.

The three plastic parts illustrated herewith are molded of double strength impact-resistant Bakelite by Chicago Molded Products Corporation, Chicago, Ill.

Metco Metallizing Gun—Type 2E

For using the metallizing process in the restoration of worn machine parts of all kinds, the Metallizing Engineering Company, Inc., Long Island City, N. Y., has introduced the Metco Type 2E Metallizing Gun for a wide range of applications. In the operation of the device the metal wire is automatically fed into the gun at an adjustable speed, where it is melted by means of a concentrated flame, atomized by compressed air and sprayed on any base material. New outstanding features of the Type 2E gun are: the "Controlled Power Unit" which gives uniform and steady wire feed for production service, eliminating the need for gear changes, and the "Universal Gas Head" which allows the use of Acetylene, Propane, Hydrogen, natural or manufactured gas with balanced pressures and without changing heads.

General Electric Offers New Tri-Clad Capacitor Motor

As an extension of its recently announced line of new polyphase induction motors, General Electric Company, Schenectady, N. Y., offers a new Tri-Clad capacitor designed for a large number of varied applications. Like the polyphase Tri-Clad motor, this capacitor motor features modern appearance, and better mechanical and electrical protection as well as protection against wear and tear.

The new capacitor motor may be obtained with either ball-bearing or sleeve-bearing construction, and is available in two types—Type KC and Type KCJ. The former type is designed particularly for applications requiring moderate starting torques such as fans, blowers and centrifugal pumps, while Type KCJ is designed for compressors, loaded conveyors, reciprocating pumps, and other applications requiring high starting torque.

The capacitors are mounted inside the end shield on the normal torque motor, while on the high-starting torque motor, 1½ horsepower and larger, they are mounted in a compact case on top of the motor frame. In both of its forms, the capacitor motor incorporates all protective features of the Tri-Clad line—complete mechanical protection through the use of a cast iron frame; electric protection made possible by the use of Formex wire in the magnet coils, and improved bearing design and lubricating arrangements. It also utilizes the cast-aluminum rotor and double-end ventilation, and in addition offers many convenience features.

Injection Molding of "Mycalex"

Injection molding of "Mycalex," a material consisting of ground mica and a specially developed glass, has been announced as a new development by the plastics department of General Electric Company, at Pittsfield, Mass. Because of its low dielectric power losses, the material is expected to find widespread use in the radio and electronic field, and because of high mechanical strength, heat resistance and dielectric value, in industrial control and heating industries. For some years the company has compression-molded Mycalex in plate and bar form and machined to required designs. Mycalex has also been molded by direct compression methods into various important insulating parts such as rectifier seals, and brush holder studs in which metal members are required as integral parts. By the injection process the material can be produced in more intricate shapes and many new applications should result.

New Methods and Equipment

Warren Portable Carriage for Factories, etc.

Aimed to eliminate production inefficiency resulting from time losses incurred while work in process is moved considerable distances within a plant, to motors, tools, and light machines, for subsequent operations, the Warren Steel Specialties Corporation, Warren, Ohio, has developed a portable carriage to enable workmen to wheel awkward-to-handle, heavy, and lightweight but hitherto stationary machines direct to the job rather than carry the work back and forth through tool rooms or the factory. The carriage is constructed of angle iron, channel, and heavy gauge auto body sheets welded together, and is provided with handles for lifting, guiding, etc. The Warren Carriages are available in practically all sizes, as it is the designer's purpose to fabricate the unit to suit individual needs of equipment manufacturers.

Modern Airplane Wing Designs Are Applied to Low Lift Propeller and Deep Well Pumps

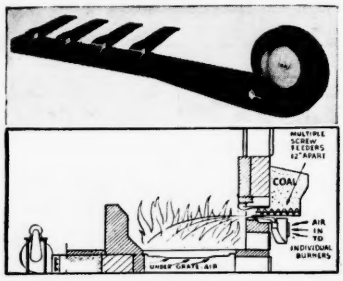
The well known and readily recognized airfoil sections used in modern airplane wings are being applied commercially to deep well and propeller pumps. Airplane principles adapted to the propeller vane sections have been thoroughly and successfully applied to deep well applications by the Peerless Pump Division of the Food Machinery Corporation, San Jose, Calif., it is claimed, and signal improvements have been noted. Specific advantages are said to be higher efficiencies and better pump life. While the thicker vane sections increase first cost somewhat, the improvement in performance and life warrant the increase many fold, it is declared.

Impulse Timers Simplify Welding of Heavy and Laminated Sections

In resistance welding, conditions are frequently encountered where a single "shot"—for various reasons—will not produce a perfect or consistently satisfactory weld. To meet such conditions, a line of electronic "impulse" timers is now available from Weltronic Corporation, Detroit, Mich. The line consists of a semi-automatic (Model No. 114) and a high speed automatic (Model No. 57) Weltronic timer. The former is adjustable for "on" time, "weld" time, "cool" time, and for the number of interruptions of current desired, while the latter, in addition to these adjustments, also has a dial for regulating the "off" time between resistance welds. Both models are designed for use in combination with electronic contactors.

Unique Air Injection Manifold for Spreader Type Stokers

For use on its line of spreader type stokers, the American Coal Burner Company, Chicago, Ill., has developed a noiseless type of low pressure air injection manifold which has the ability, it is claimed, of spreading small sizes of coal in a predetermined pattern conforming to furnace grate area with less than 25 percent plus or minus cumulative variation. As shown by an accompanying illustration, the manifold is designed to connect directly to a standard 1750 r.p.m. low pressure blower. One air outlet nozzle is provided to protrude directly below each of the mechanically driven coal delivery screws of the stoker, the shape of each nozzle being worked out to give flat, fan-shaped spreading of coal. Tests are said to show the boiler capable of supplying air at a maximum of 4½-inch static pressure, which is considerably in excess of the 1¾-inch static pressure the manufacturer recommends for normal firing with small sized coal. Adjustment for various sizes of coal, wet or dry, is secured with a main manifold damper and small, individual dampers on each spreader nozzle. Applications of the manifold, according to the manufacturer, are expected to be in small and medium size steam plants where modernization of existing furnaces is desired. Units are normally built with two or more spreader nozzles.



Noiseless Type of Low Pressure Air Injection Manifold for Spreader Type Stokers

National Tube Promotes Cox and Sanders

The National Tube Company, Pittsburgh, Pa., subsidiary of United States Steel Corporation, has announced the election of C. R. Cox as Executive Vice President succeeding B. C. Moise who has retired after more than 50 years' continuous service. E. N. Sanders, formerly Assistant Vice President, Operations, has been elected Vice President in Charge of Operations succeeding Mr. Cox, who was born in 1891 and was educated at New York University. Mr. Sanders was born in 1897 and was educated at the University of New Hampshire.

49-Hour Paper Run Without Wet End Break at Southland Paper Mill

For 49 hours recently, newsprint sped through a G-E-driven paper machine at the Southland Paper Mills, Inc., Lufkin, Texas, without a wet end break or a snap-off at the calender stack, establishing what is believed to be a new record in the newsprint industry for a continuous paper run. An estimated 300 tons or 675 miles of newsprint was produced during this unusual run.

The Southland mill, the first of its kind in the world to utilize Southern pine 100 per cent in the manufacture of newsprint, offered a real challenge to engineering ingenuity. The combination of grinder and paper machine load was subject to load variations as large as 3000 kw. As the independent units of the paper machine are linked by only the weak web of paper in process, it was obvious that any minute variation in system frequency or direct-current generator voltage would affect section speeds differently, and so would cause breaks in the paper.

Careful engineering and co-ordination solved this problem. General Electric turbines in this plant were equipped with three-arm governors, capable of holding speed within one-quarter of a cycle under the worst swings of load.

However, it was believed that even this tiny variation, when transmitted through the apparatus, would cause a break in less than a second. Therefore, voltage regulators were applied to the exciter and generator; Selsyn-drive speed controls were installed on the section-drive motors.

A buck-and-boost generator was employed to give extremely fast counteraction on incipient voltage changes. Automatic follow-up control was provided to operate the generator field rheostat if the buck or boost persisted beyond a few seconds. In addition, carefully calculated flywheels were added to certain section motors to overcome differences in rotational inertia.

STAYNEW AND PROTECTOMOTOR FILTERS—
Catalog—44 pages, illustrating and describing the latest Staynew and Protectomotor filters for compressed air, gases, liquids, engine and compressor intake, and for building ventilation; catalog presents sectional drawings, diagrams, specification charts, and detailed engineering data, with other valuable information.
Staynew Filter Corporation, Rochester, N. Y.

RYERSON STEELS—
Handbook—listing Ryerson steels of certified quality carried in stock for immediate shipment.
Joseph T. Ryerson & Son, Inc., offices and warehouses, Jersey City, N. J.

STEEL—
Buyers Guide for Steel Users—presenting the 1941 stock list, the largest and most complete steel buyer's guide ever published by—
Joseph T. Ryerson & Son, Inc., chicago, Ill.

Industrial News

Will Handle Goodrich Mechanical Rubber Goods

Vice President J. H. Connors of the B. F. Goodrich Company, Akron, Ohio, in charge of the sale of mechanical goods, announces that the Georgia Hardware and Supply Company, Albany, Ga., will handle the Goodrich line of mechanical rubber goods in the Albany vicinity.

Goodrich Distributors Have Long Records

Plaques commemorating long records of connection with the company have been presented oy The B. F. Goodrich Company, Akron, Ohio, to the following firms, according to J. H. Connors, vice president in charge of mechanical goods sales: Keith-Simmons Company, Inc., 30 years, James Supply Co., Chattanooga, Tenn., Turner Supply Company, Mobile, Ala., Weaks Supply Company, Monroe, La., and Young and Vann Supply Company, Birmingham, Ala., all 25 years; Harris Hardware Company, Washington, N. C., C. M. McClung and Company, Knoxville, Tenn., and J. W. Smoak Hardware Company, Orangeburg, S. C., 20 years; Harry P. Leu, Inc., Orlando, Fla., 15 years; Cape Fear Supply Company, Fayetteville, N. C., and The Grinnell Company, Atlanta, Ga., 10 years, and the Hector Supply Company, Miami, Fla., 5 years. A. G. Coffin is southeastern district manager of mechanical goods sales for the Goodrich Company.

Two-Ton Rubber Press Pad

One of the largest ever produced, a rubber press pad more than 14 feet long and 4 feet wide, weighing two tons, manufactured by The B. F. Goodrich Company, Akron, Ohio, has been installed on a 5000-ton press built by Hydraulic Press Company, Mt. Gilead, Ohio, for a British aircraft factory. It will soon be in service stamping out parts for the Royal Air Force. The rubber is used in a new method of fabricating parts for airplanes.

Charles Bernhardt Jahnke

Suffering a heart attack while he worked in the garden of his home, Charles Bernhardt Jahnke, president and general manager of The Cooper-Bessemer Corporation, Mt. Vernon, Ohio, died at Mercy Hospital, Mt. Vernon, on May 6. Born in Cincinnati in 1889, Mr. Jahnke graduated from the University of Cincinnati and was for 21 years associated with Fairbanks, Morse & Company, having achieved the positions of chief engineer, works manager, and finally director of engineering. He joined International Harvester Company in 1931 and four years later became associated with the Cooper-Bessemer Corporation as its chief engineer. He became vice president and general manager in 1937 and on December 27, 1940, was elected president and general manager. He was a member of the American Society of Mechanical Engineers and Society of Automotive Engineers. Surviving are his widow, two sons and two daughters.

Byers Installs Electric Furnace Equipment

About June 15, the A. M. Byers Company, Pittsburgh, Pa., will enter the field of alloy steel manufacture, when its new electric furnace equipment will be placed in operation. Available alloy steel production for America s defense needs will then be increased by another 30,000 to 40,000 tons a year, according to L. F. Rains, president. Construction of a plant addition and the installation of electric furnace equipment at the Byers Ambridge works have been speeded and production will begin six weeks ahead of the original schedule. Initial products will be billets and bars for alliy steel fabricators.

Norton Company Appoints McCune Field Engineer

W. Alexander McCune, Jr., has been appointed field engineer for the Philadelphia territory by the Abrasive Division of Norton Company, Worcester, Mass. Before going to Philadelphia, Mr. McCune was in the Laboratories and Sales Engineering Department in Worcester.

Brown Made Secretary of United States Steel Corporation

George K. Leet, Secretary of the United States Steel Corporation, and for many years a prominent figure in the steel industry, has retired after 30 years of service with the corporation. He held the office of secretary more than 19 years and retired under the corporation's pension plan. William Averell Brown, Assistant General Solicitor of the United States Steel Corporation since 1918, was elected secretary to succeed Mr. Leet. All other officers of the corporation were re-elected. Mr. Brown, the new secretary, was born in 1885 and graduated from Harvard University in 1906 with an A. B. degree, and was graduated from the Harvard Law School in 1908. He joined the Law Department of United States Steel Corporation in 1917, and a year later was made Assistant General Solicitor of the corporation, a position which he has since held.

TRADE LITERATURE

TEXTILE MILL MOTORS—
Folder F-8624—illustrating and describing range drive motors and control for textile mills; each piece of apparatus illustrated and explained, with installation photographs showing how to apply motors to get the correct range of speed for maximum control, flexibility, capacity, and space saving in washing, printing, tentering and other operations.
Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.

PAGE FENCES—
Catalog—new and improved publication announced by Page Steel and Wire Division of the American Chain and Cable Company, Inc., Monessen, Pa.; sections simplified so that the fence buyer may quickly select the Page Fence for his particular needs, each section being devoted to a particular type of fence; publication is generously illustrated and presents descriptions, specifications, etc.; technical construction details illustrated by simple line drawings so that unimportant and confusing non-essentials are eliminated.
Page Fence Association, Monessen, Pa., or Bridgeport, Conn.

MEASURES OF WEIGHT AND LENGTH—
Technical Data Card No. 112—an 8½-inch by 11-inch card of easily read millimeter to inch conversions from 1mm. to 300 mm. and a comparison of metric-English measures of weight and length may be obtained from—
The Babcock & Wilcox Tube Company, Beaver Falls, Pa.

WATER-COOLED ROOFS—
Folder (Form TA-2)—"Spray Pond Or Water-Cooled Roofs," illustrating and describing types of water-cooled roofs for structures with or without air conditioning; discussing the amount of water that should be used, construction costs, advantages of coal tar pitch, roof bonds, etc., and presents typical specifications, including flashing, for water-cooled roofs.
Koppers Company, Tar and Chemical Division, Pittsburgh, Pa.

ANGLEDOZERS AND BULLDOZERS—
Folder A-18—graphically illustrating the use of Angledozers and Bulldozers, the almost universal application of which on all forms of earthmoving, construction, pioneering and handling has made this tractor tool well nigh indispensable; design and features of the 'Dozers are claimed to increase production and lower operation costs.
R. G. LeTourneau, Inc., Peoria, Ill.

CENTRIFUGAL PUMPS—
Bulletin B-6146—illustrating and comprehensively describing high grade single-stage double-suction centrifugal pumps, Type S, for every pumping service; in addition to data on construction features, pump dimensions, normal and special applications, the bulletin also presents friction tables, hand-capacity tables, and other valuable pump engineering information.
Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

SEAMLESS TUBES AND PIPE—
Data Card No. 107A—new, revised list of standard specifications for seamless tubes and pipe, arranged in handy finger tip form.
The Babcock & Wilcox Tube Company, Beaver Falls, Pa.

TRUCKS AND ELEVATING TABLES—
Bulletin No. 122—illustrating and describing Lyon Trucks and elevating tables.
Lyon Iron Works, Greene, N. Y.

ADJUSTABLE-SPEED DRIVE—
Bulletin 310—devoted to an all-electric adjustable-speed drive for alternating-current circuits.
Reliance Electric and Engineering Company, Cleveland, Ohio.

NASH GLASS PUMP—
Bulletin 336—illustrating and describing the Nash Glass Pump, a centrifugal of "Pyrex" brand heat, shock, and acid-resistant glass.
Nash Engineering Company, South Norwalk, Conn.

"APPRAISING ARKANSAS"—The foregoing is the title of an attractive brochure published by Halsey, Stuart & Co., Inc., Chicago, Ill., presenting the resources and possible lines of future development of the State of Arkansas. This study offers an analysis of some aspects of the trend of the national defense program. The brochure is illustrated with some 75 photographs, and was prepared by Halsey, Stuart & Co., Inc., with the cooperation of state officials, and with state officials as authority for the factual and statistical information. While summarizing Arkansas' resources, it indicates the potentialities of the state, industrially and agriculturally.

ELECTRICAL EQUIPMENT—
Leaflet (Descriptive Data 38-620)—devoted to primary fuse cutouts for outdoor use on distribution transformer installations;
Leaflet (Descriptive Data 18-320)—describes a pin hole detector for showing up holes in sheet metal;
Bulletin B-2273—devoted to unitized light-duty metal-clad switchgear for control stations and industrial plants.
Department 7-N-20, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.

THERMIT WELDING—
Booklet—36 pages, illustrating and describing the Thermit welding process and its applications, explaining the Thermit reaction and giving much information on the physical properties of Thermit welds.
Metal and Thermit Corporation, New York City.

Important New Industrial Plants in the South

(*Continued from page* 33)

facture of certain types of heavy-duty tires; project will involve spending about $15,000,000 of which approximately $2,500,000 is being spent by Air Reduction Co., for a plant to make calcium carbide, which is the raw material for du Pont's neoprene; both companies will finance and operate their own plants.

MARYLAND

RIVERDALE—machine tools—Engineering and Research Corporation receiving bids for addition to plant; 260 x 60 ft.; brick and steel; Kubitz & Koenig, Engrs., Emerson Tower Bldg.; following are prospective estimators: Avon Construction Co., Inc., 216 E. Lexington St.; Kirson Construction Co., 339 St. Paul St., Cogswell Construction Co., 406 Park Ave., all Baltimore; Skinker & Garrett Contractors, 1719 I St., N. W.; Charles H. Tompkins Co., 907 16th St., N. W., both Washington, D. C.; Jesse Jones, Federal Loan Administrator, announced execution of a lease agreement with company to provide for construction and equipping plant to cost $201,415; it is estimated that approximately $40,000 of this amount will be used for land and buildings, and approximately $161,415 for equipment and machinery; machine tools and aircraft parts will be manufactured.

MISSOURI

KANSAS CITY — expansion — Sheffield Steel Corp., announced a $1,000,000 expansion program for plant at Kansas City, in addition to the construction of a new $12,000,000 plant at Houston, Tex., now under way.

ST. LOUIS—accessories—Federal Judge Moore authorized expenditure of $6,457,090 by Missouri Pacific System, Guy A. Thompson, trustee, for rail and equipment; of this amount $2,744,440 is for new rail and accessories for 1942 requirements and will consist of 1,000 new box cars and 70 hopper cars.

ST. LOUIS — aircraft — Government allotted more than $500,000 to McDonnell Aircraft Corporation at Lambert-St. Louis field for acquisition of land and expansion of plant facilities, including machinery and equipment for aircraft plant.

NORTH CAROLINA

SYLVA—expansion — Sylva Paperboard Co., has underway $250,000 expansion program; increase production approximately 60 per cent; company manufactures chestnut tanning extract and chestnut corrugated board.

SOUTH CAROLINA

GEORGETOWN—expansion — Southern Kraft Corp., 220 E. 42nd St., New York City, reported, plans expending approximately $2,000,000 for expansion of present $8,000,000 paper mill; reported to install paper machine 40 ft. longer than machine now in use; arrangements made for housing for increase in workers.

TENNESSEE

MEMPHIS—gas line—Memphis Natural Gas Co., Sterick Bldg., will start work around July 1, on proposed solid welded pipe line from Monroe, La. to Memphis; 55 miles of 18-inch pipe; will be a loop line to parallel portion of the now existing 18-inch line from Guthrie, La. to Memphis; this loop will be in 4 sections, namely 22.8 miles in La., 10.83 miles in Ark., 8.40 miles in Miss., for one loop and 12.97 miles for another loop, also in Miss.; in addition to the above will also install an additional 600 h.p. compressor at Guthrie, La., compressor station; one-half of pipe has been purchased from Youngstown Sheet & Tube Co., Youngstown, Ohio, and one-half from National Tube Co., Frick Bldg., Pittsburgh, Pa.; valves and fittings have been purchased from Walworth Co., Boston, Mass.; contract for laying the line has been awarded to N. A. Saigh Co., Builders Exchange Bldg., San Antonio, Tex.; compressor has been purchased from Clark Brothers Co., Division of Dresser Manufacturing Co., Olean, N. Y. and contract for installing same has been awarded to Fluor Corp.

NASHVILLE—cars — Nashville, Chattanooga & St. Louis Rwy., Fitzgerald Hall, Pres., will expend $5,000,000 on new equipment, to include 10 all-steel passenger cars, 1,000 freight cars, 16 locomotives, 6 of which will be Diesel powered switch engines.

TEXAS

Magnolia Petroleum Co., Magnolia Bldg., Dallas, preparing to start construction of a 200-mile natural gas pipeline from production in Jackson County, southwest Texas to provide fuel for company's refining operation in the Beaumont area; capacity of line will be in excess of 60,000,000 cu. ft. of gas per 24 hrs.; major portion of line will consist of 14-in. pipe; pipe purchased.

CORPUS CHRISTI—zinc refining plant—Roy E. Thomas, 509 Hobart Bldg., Perth Amboy, New Jersey, designing electrolytic zinc refining plant for American Smelting and Refining Co., 120 Broadway, New York; will call for bids in next several weeks; estimated cost $5,200,000.

GARLAND—airplane parts—RFC authorized a loan of $100,000 to Southern Aircraft Corp. for plant expansion, purchase of additional machinery and working capital in connection with manufacture of airplane parts.

ARANSAS PASS — boat works — Rice Brothers and Westergard Boat Works, Inc., operating under name of Westergard Boat Works, Inc. and Rice Bros. for purpose of building 110 ft. submarine chasers for U. S. Navy.

HOUSTON — addition — Fooshee and Cheek, Archts., 1901½ N. Harwood St., Dallas, preparing plans and specifications for 2-story office building and four 1-story masonry plant buildings for Emsco Derrick and Equipment Co., on its plant site adjacent to Garden Villas; call for bids within 30 days; office of reinforced concrete with either shell stone or face brick exterior; air conditioned; 42 x 120 ft., not including wing; work under way on 1-story, 50 x 325 ft., steel frame, galvanized iron addition to plant; Mosher Steel Co., 3910 Washington St., has contract to fabricate and erect the building; W. A. Burnham, 714 Williard St., contract for foundation and concrete work; Francis J. Niven, Consulting Engineer, 2306 Crawford St.

HOUSTON—lubricating oil plant—Sinclair Refining Co., 630 5th Ave., New York, advises "have given some consideration to the construction of additional lubricating oil manufacturing facilities at our Houston Refinery, but so far we have not taken any definite steps in regard thereto"; Consolidated Oil Corp. previously noted considering location of lubricating oil unit at Texas City.

WEST VIRGINIA

Hydro electric project—Electro Metallurgical Co., Carbide & Carbon Bldg., New York, applied to Federal Power Commission for a license of its hydroelectric plant already constructed on New River near Hawk's Nest and Gauley Bridge; ultimate enlargement of total plant capacity from 140,000 h.p. to 175,000 h.p. is proposed including adding 5 ft. to height of the crest gates of the dam and excavating the tailrace to increase the head about 10 ft.; no new water conduits, powerhouses, substations or transmission lines are contemplated.

Eastern Air Lines Makes Winston-Salem Stop

The Civil Aeronautics Board has authorized Eastern Air Lines, Inc., to include Winston-Salem, N. C., as an intermediate stop on its New York-New Orleans route, with the restriction that flights stopping at Greensboro, N. C., twenty miles away, would not stop at Winston-Salem and those stopping at Winston-Salem would not stop at Greensboro.

Arkansas' Aims For Industrial Development

(*Continued from page 39*)

Show.

From the above analysis of the needs and opportunities for development in Arkansas, it is logical to say that in the immediate future, our most successful development will come from within. It is necessary that the people of Arkansas take cognizance of the new trends in farming and farm marketing. Ours is an immediate problem of lifting ourselves by our own economic bootstraps with the aid of the federal government. Beyond that lies the objective of achieving great reserves of power at cheap rates which can be used to attract foreign capital to build large industries in Arkansas, and the lowering of freight rates to place this territory on a competitive basis with other adjacent territories.

Because of the similarity in problems of development, it will be the policy of my administration to cooperate with other states of the South in measures concerning our mutual benefit. I shall be eager to see what methods are being used by other Southern states in their climb to greater agricultural and industrial heights.

At all times, my administration will have foremost in mind the keen realization of the social, economic and financial condition of our people. At the same time we will be possessed with the knowledge that our state is wonderfully blessed in the wealth of its citizenship and natural resources. Wealth of countries at long last is beginning to be measured by the class of people who inhabit them and by their God-given resources. We lack only monetary capital for development; however, with the anticipated cooperation of the citizens of Arkansas and the South on immediate and future developments, foreign capital will not be long in realizing that Arkansas is truly the opportunity land of the South.

Seventh International Heating and Ventilating Exposition

General announcement has been made that the Seventh International Heating and Ventilating Exposition will be held January 26-30, 1942, in the Commercial Museum, Philadelphia, Pa., under the auspices of the American Society of Heating and Ventilating Engineers. Co-incident with these dates, the Society will hold its 47th annual meeting. The International Heating and Ventilating Exposition is a biennial event, the last having been held at Cleveland, Ohio, in 1940. By reason of the large amount of equipment shown for treating air, as well as for heating and ventilating, it has come to be known as "The Air Conditioning Exposition." These expositions are under the management of the International Exposition Company, New York City, Charles F. Roth, president. Already more than half the exposition space has been taken, it is announced, by nearly 200 leading manufacturers.

National Defense Program Awards in the South

(Continued from page 29)

S. Rosenbloom, Inc., Baltimore, 50,000 mattress covers, $59,690.

Dietrich Brothers, Inc., Baltimore, furnishing & erecting structural steel at Edgewood Arsenal, $54,000.

Ordnance (Army)

Black & Decker Manufacturing Co., Towson, portable grinders, $5,185.

Revere Copper & Brass, Inc., Baltimore, brass rod, $2,398.

Pangborn Corp., Hagerstown, renovating equipment, $1,567.

Aresto Mfg. Co., Baltimore, flame arresters, $5,100.

Rustless Iron & Steel Corp., Baltimore, steel, $13,472.

William E. Hooper & Sons Co., Baltimore, sash cord, $1,363.

Baltimore Lumber Co., Baltimore, lumber, $6,971.

Corps of Engineers (Army)

Anchor Post Fence Co., Baltimore, fence, wire and gates, chain link type, $7,576.

American Instrument Co., Silver Spring, heliotropes, $2,113.

Chemical Warfare Service (Army)

Porcelain Enamel & Mfg. Co., Baltimore, soda lime, $12,000.

O'Sullivan Rubber Co., Hagerstown, outlet valves, $60,000.

Signal Corps (Army)

Graybar Electric Co., Inc., Point Breeze, holders and protectors plates, $1,365.

Westinghouse Electric & Manufacturing Co., Baltimore, transformers, $1,316.

Julien P. Friez & Sons, Division of Bendix Aviation Corp., Baltimore, wind vanes, $6,500.

Air Corps (Army)

Fairchild Engine and Airplane Corporation, Fairchild Aircraft Division, Hagerstown, airplanes and spare parts, $4,746,951.

William E. Hooper & Sons Co., Baltimore, cotton duck, $16,573.

Mt. Vernon Woodberry Mills, Inc., Baltimore, cotton duck, $29,900.

Supplies & Accounts (Navy)

Engineering & Research Corp., Riverdale, motor-driven sheet metal forming, flanging and shrinker machines, $17,324.

Washburn-Crosby Co. (Trade Name), Eastern Div. of General Mills, Inc., Baltimore, wheat flour in sacks, $7,946.

The L. A. Benson Co., Inc., Baltimore, carbon & high speed steel countersinks and reamers, $46,847.

Revere Copper & Brass, Inc., Baltimore, copper-nickel alloy condenser tubes, $148,520.

National Lead Co., Baltimore Branch, Baltimore, grades "A" & "D" wire & bar tin-lead solder, $43,366.

The Alexander Milburn Co., Baltimore, cutting oxyacetylene torches, $36,300.

Alemite Co. of Maryland, Baltimore, pressure lubricating guns, $6,668.

Standard Wholesale Phosphate and Acid Works, Baltimore, sulphur, 2,240 lbs. to the ton, $24,850.

Revere Copper & Brass, Inc., Baltimore Div., Baltimore, type F strip copper, $10,550.

Yards & Docks (Navy)

Anchor Post Fence Co., Baltimore, fence at the Naval Academy (Radio Station), $2,005.

Emergency Ship Program (U. S. Maritime Commission)

Bethlehem-Fairfield Shipyard, Baltimore, 12 cargo carriers, $19,800,000.

Bethlehem-Fairfield Shipyard, Baltimore, 3 ways, $2,109,375.

Public Buildings Administration (Federal Works Agency)

P. H. C. Housing Corporation of New York, N. Y., defense housing (14 units) prefabricated, demountable houses for industrial personnel at Indian Head, $39,904.

The following awards are for additional units of prefabricated, demountable houses for industrial workers at Naval Powder Plant, Indian Head. (Options for additional units have now been exercised.)

Public Buildings Administration (Federal Works Agency)

Lockwall House, Inc., New York City, 15 units, $44,250.

National Homes Corporation, Lafayette, Indiana, 13 units, $38,558.

Tennessee Coal, Iron and Railroad Co., Birmingham, Alabama, 8 units, $23,008.

Standard Houses Corporation, Chicago, Illinois, 7 units, $19,817.

Harwood-Nobel Construction Co., Washington, D. C., 20 units, $58,500.

Allied Housing Associates, Inc., Langhorne, Pennsylvania, 27 units, $71,010.

General Fabricators, Inc., Washington, D. C., 10 units, $27,800.

MISSISSIPPI

Value of Total Awards July 1, 1940 to May 15, 1941

Army Contracts	$15,144,835
Navy Contracts	4,013,696
W. P. A. Defense Projects (F. W. A.)	2,652,343
Public Buildings Administration, Def. Housing (F. W. A.)	148,500
Office of Education Defense Training (F. S. A.)	793,371
National Youth Administration (F. S. A.) (Defense Training Funds for 1941)	970,170
Reconstruction Finance Corporation (F. L. A.)	150,000

CONTRACT AWARDED APRIL 16 TO MAY 15

Quartermaster Corps (Army)

N & W Overall Co., Jackson, 3,600 pr. khaki cotton trousers, $6,300.

MISSOURI

Value of Total Awards July 1, 1940 to May 15, 1941

Army Contracts	$328,467,649
Navy Contracts	21,617,931
W. P. A. Defense Projects (F. W. A.)	900,762
Office of Education Defense Training (F. S. A.)	869,495
National Youth Administration (F. S. A.) (Defense Training Funds for 1941)	1,505,297
Defense Plant Corporation (F. L. A.)	16,259,044
Reconstruction Finance Corporation (F. L. A.)	216,055

CONTRACTS AWARDED APRIL 16 TO MAY 15

Corps of Engineers (Army)

Hussmann-Ligonier Co., St. Louis, cabinets, $3,576.

Shower Mfg. Co., Kansas City, 1,452 bakers' & cooks' coats, $1,815.

Pleetoox Products Co., St. Louis, 1,800 bakers' & cooks' coats, $2,160.

Continental Can Co., St. Louis, 200,000 filter discs cans, $6,898.

East St. Louis Stone Co., East St. Louis, Illinois, crushed stone, Jefferson Barracks, $27,600.

Hussman-Ligonier Co., St. Louis, refrigerators and ice boxes, $18,553.

Majestic Mfg. Co., St. Louis, kitchen equipment, $4,166.

Maloney Electric Co., St. Louis, transformers & current regulators, $8,227.

Ordnance (Army)

St. Louis Cordage Mills, St. Louis, manila rope, $1,723.

Lincoln Engineering Co., St. Louis, lubricating guns, $11,875.

Gross & Janes Co., Southeast, creosoted ties, $6,962.

Medical Corps (Army)

Phillips-Drucker, St. Louis, centrifuges, $18,160.

Buck X-Ograph Co., St. Louis, X-ray field equipment, $24,754.

Buck X-Ograph Co., St. Louis, intensifying screens, $23,117.

Mallinckrodt Chemical Works, St. Louis, chemicals, $2,461.

Quartermaster Corps (Army)

International Hat Co., St. Louis, 50,000 fibre helmets, $62,230.

Rice-Stix Dry Goods Co., Slater, 225,000 drawers, cotton shorts, $65,812.

Rice-Stix Dry Goods Co., St. Louis, 600 field desks, $8,700.

St. Louis Embroidery Works, St. Louis, 75,000 sleeve chevrons, $10,750.

S. G. Adams Co., St. Louis, 4,250 mess trays, $6,056.

Jasper Blackburn Products Corp., St. Louis, arc welding kit, $354.

D. M. Oberman Mfg. Co., Jefferson City, 10,000 pr. khaki cotton trousers, $17,500.

Brown Shoe Co., St. Louis, 312,500 prs. service shoes, $1,056,250.

International Shoe Co., St. Louis, 375,000 prs. service shoes, $1,173,750.

Continental Can Co., Inc., St. Louis, cans and containers, $7,446.

Coast Artillery Corps (Army)

A. Leschen & Sons Rope Co., St. Louis, galvanized clips, $930.

Yards & Docks (Navy)

Standard Asbestos Mfg. and Insulating Co., Kansts City, unloading and stock-piling pipe at Homestead, Florida and water supply system, Naval Station, Key West, Florida, $16,221.

Marine Corps (Navy)

C. Hager & Sons Hinge Mfg. Co., St. Louis, hinges and hasps, $2,600.

Adams Net & Twine Co., St. Louis, camouflage nets, $1,922.

Supplies & Accounts (Navy)

Gruendler Crusher & Pulverizer Co., St. Louis, green garbage grinders with motors, controls and spare parts, $65,689.

The Ismer-Hincke Milling Co., Kansas City, wheat flour in sacks, $127,500.

Rodney Milling Co., Kansas City, wheat flour in sacks, $29,875.

The Alligator Co., St. Louis, rain clothes, $127,738.

Diagraph Bradley Stencil Machine Corp., St. Louis, stencil cutting machines, $12,650.

Fred Medart Mfg. Co., St. Louis, metal lockers —clothes, $20,817.

Bureau of Ships (Navy)

Busch-Sulzer Brothers, Diesel Engine Co., St. Louis, four sets propelling machinery for minesweepers, at St. Louis Plant, $1,180,000.

Busch-Sulzer Brothers, Diesel Engine Company, St. Louis, twelve sets propelling machinery and spare parts for minesweepers, at St. Louis Plant, $8,125,560.

Air Corps (Army)

Standard Steel Works, North Kansas City, trailers and dollies, $624,332.

H. D. Lee Mercantile Co., Kansas City, flying suits, $80,245.

NORTH CAROLINA

Value of Total Awards July 1, 1940 to May 15, 1941

Army Contracts	$52,012,427
Navy Contracts	14,660,644
U. S. Maritime Commission Emergency Ship Program	64,549,375
Farm Security Admin. (Agr.) (Defense Housing)	70,000
W. P. A. Defense Projects (F. W. A.)	2,549,321
U. S. H. A. Defense Housing Projects (F. W. A.)	897,900
Public Buildings Admin., Def. Housing (F. W. A.)	1,543,000
Office of Education Defense Training (F. S. A.)	984,892
National Youth Administration (F. S. A.) (Defense Training Funds for 1941	1,506,224
Reconstruction Finance Corporation (F. L. A.)	5,164

CONTRACTS AWARDED APRIL 16 TO MAY 15

Quartermaster Corps (Army)

Blue-Bell-Globe Mfg. Co., Greensboro, 75,000 herringbone twill suits, $71,625.

Corbitt Company, Henderson, trucks with cargo bodies and winches, $730,000.

The Windsor Co., Concord, 450,000 cotton sheets, $379,394.

Medical Corps (Army)

High Point Bending & Chair Co., Silver City, chairs, $48,384.

Batavia Mills, Inc., Concord, towels, $110,302.

Supplies & Accounts (Navy)

Granite Falls Mfg. Co., Hickory, semi-commercial cotton twine, $33,800.

Elliott Knitting Mills, Inc., Hickory, black cotton socks, $49,000.

Maurice Mills Co., Inc., Thomasville, black cotton socks, $24,900.

Marine Corps (Navy)

Chatham Mfg. Co., Elkin, green woolen blankets, $25,500.

Emergency Ship Program (U. S. Maritime Commission)

North Carolina Shipbuilding Co., 12 cargo carriers, Wilmington, $19,800,000.

North Carolina Shipbuilding Co., 3 ways, $2,109,375.

OKLAHOMA

Value of Total Awards July 1, 1940 to May 15, 1941

Army Contracts	$18,394,212
Navy Contracts	1,879,219
W. P. A. Defense Projects (F. W. A.)	3,024,696
Public Buildings Admin., Def. Housing (F. W. A.)	465,500
Office of Education Defense Training (F. S. A.)	622,827
National Youth Administration (F. S. A.) (Defense Training Funds for 1941)	1,125,445
Reconstruction Finance Corporation (F. L. A.)	165,000

CONTRACT AWARDED APRIL 16 TO MAY 15

Corps of Engineers (Army)

American Monorail Co., Cleveland, Ohio, cranes, carriers, hoisting equipment, for aircraft assembly plant, Tulsa, $313,183.

SOUTH CAROLINA

Value of Total Awards July 1, 1940 to May 15, 1941

Army Contracts	$23,265,335
Navy Contracts	123,486,275
W. P. A. Defense Projects (F. W. A.)	2,820,511
U. S. H. A. Defense Housing Projects (F. W. A.)	3,301,238
Public Buildings Admin., Def. Housing (F. W. A.)	1,059,000
Office of Education Defense Training (F. S. A.)	506,361
National Youth Administration (F. S. A.) (Defense Training Funds for 1941)	844,318
Reconstruction Finance Corporation (F. L. A.)	87,664

CONTRACTS AWARDED APRIL 16 TO MAY 15

Quartermaster Corps (Army)

Nantex Mfg. Co., Greenwood, 900,000 drawers cotton shorts, $256,981.

(Continued on page 58)

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ARMCO

ARMCO
ZINCGRIP-PAINTGRIP SHEETS

Defense Industry — A Base for Community Expansion

(*Continued from page* 26)

would be the part of wisdom and foresight for the city to exercise every means within its power to hedge against post-emergency headaches, as far as it is possible to do so. If present circumstances can be used as a spring-board for industrial development, many of the prospective ills of the future may be alleviated before they occur.

Specifically, the types of industries which might be attracted to Wilmington, depends to a large extent upon certain basic factors existing in the area and favorable to these types of manufacture. Since the area is one of the finest truck producing regions in the state and is immediately adjacent to heavy seafood producing waters, many advantages obtain here for processing, packing, and distributing various food supplies. The trend in North Carolina is towards a larger production of processed foods. Looking ahead to the future, the tidewater location of Wilmington has certain advantages for an industry of this type. If the movement is of sufficient magnitude, it might be logical to assume that package manufacturers would become interested. Pulp from Southern mills finished into cartons and paper specialties, or even the manufacture of tin cans to supply proposed plants here and elsewhere—may have definite possibilities.

It is probable that the next several years will witness a considerable expansion of the plastics industry, as this material may be substituted for metals to conserve supplies of the latter for defense purposes. Within several hundred miles of Wilmington are the extensive Deep River Coal deposits, tremendous acreages of soy beans, large supplies of cotton linters, and other materials used in thermoplastic and thermosetting plastics. Veneer producers are numerous, and could furnish large quantities of high-grade materials for laminated products. Shipment of these products—whether structural or consumer items—would be at low cost through the Inland Water Way, or by Coastwise lanes.

Assembly plants for various types of machinery and equipment sold in the state, and for items exported by North Carolina—would seem to hold promise for Wilmington.

It is natural to expect that the present efforts to establish a greater hemispheric solidarity, and to integrate more closely the economic orders of the American republics, may have some very worthwhile projects in store for our southern port cities. It is likely that Wilmington will explore the possibilities in this connection.

No doubt, there are additional prospects that might be investigated by Wilmington, and by other communities similarly located who may desire to cushion the shock of the dislocation of their major industry after the present emergency. It is vital to the community and to the nation as a whole that the transition back to a peace-time economy be accomplished with a minimum stoppage of opportunities to work for those persons now employed in defense industries. Furthermore, from the standpoint of many of the workers and of the community, the ideal solution would be absorption by local industries.

Actually, it may not prove possible for any one city to solve its particular segment of this nationwide problem. This thought may cause us to broaden our views about the final remedy, to enter as possible necessities active regional planning to cover industrial diversification in all of those communities within the immediate neighborhood of the defense affected city. Such a plan would assume that the State, the various counties in the area, the cities and towns, and all organizations or agencies operating here, would pool their efforts and concentrate cooperatively on the problem.

Never before in our history have we had in the South such an abundance of skilled workers and adequately trained technicians. It is not uncommon to find one individual after another on a job whose former home was here in the South. Quite a few attended our engineering schools, but sought employment elsewhere. Their presence lends us potent ammunition to help refute the old cry, "The South lacks skilled workers."

With the proper thought and effort along industrial expansion lines, it is not too much to believe that permanent good may be derived from some of those defense industries which have been established in our cities and towns.

Airview of Wilmington, N. C., a potential center of industrial expansion

National Defense Program Awards in the South

(*Continued from page 54*)

Yards & Docks (Navy)

MacDougald Construction Co., dry dock at Navy Yard, Charleston (cost-plus-fixed-fee basis), estimated cost $2,465,000.

The Browning Crane & Shovel Co., Cleveland, Ohio, three 40-ton locomotive cranes at the Navy Yard, Charleston, $88,157.

Harnischfeger Corp., Milwaukee, Wisconsin, three bridge cranes at the Navy Yard, Charleston, $60,325.

TENNESSEE

Value of Total Awards July 1, 1940 to May 15, 1941

Army Contracts	61,399,544
Navy Contracts	1,720,046
Farm Security Admin. (Agr.) (Defense Housing)	107,130
Civil Aeronautics Admin. (Commerce) (Airport Expansion Program)	.....
W. P. A. Defense Projects (F. W. A.)	433,530
U. S. H. A. Defense Housing Projects (F. W. A.)	744,800
Public Buildings Admin., Def. Housing (F. W. A.)	.....
Office of Education Defense Training (F. S. A.)	1,089,292
National Youth Administration (F. S. A.) (Defense Training Funds for 1941)	1,218,616
Defense Plant Corporation (F. L. A.)	1,816,800
Reconstruction Finance Corporation (F. L. A.)	15,086

CONTRACTS AWARDED APRIL 16 TO MAY 15

Ordnance (Army)

Kerrigan Ornamental Iron Works, Inc., Nashville, welding screens, $4,288.

Fulton Sylphon Co., Knoxville, fuze, $60,900.

Quartermaster Corps (Army)

Knoxville Awning, Tent & Tarpaulin Co., Inc., Knoxville, 25,000 mattress covers, $28,606.

Knox Stove Works, Knoxville, 22,372 cast iron griddles, $73,821.

TEXAS

Value of Total Awards July 1, 1940 to May 15, 1941

Army Contracts	$86,102,810
Navy Contracts	130,204,647
U. S. Maritime Commission Emergency Ship Program	66,198,750
Farm Security Admin. (Agr.) (Defense Housing)	108,693
W. P. A. Defense Projects (F. W. A.)	14,043,346
Defense Housing F. W. A. and C. H. A.	712,500
U. S. H. A. Defense Housing Projects (F. W. A.)	2,791,829
Public Buildings Admin., Def. Housing (F. W. A.)	3,011,500
Office of Education Defense Training (F. S. A.)	2,473,520
National Youth Administration (F. S. A.) (Defense Training Funds for 1941)	2,792,474
Defense Plant Corporation (F. L. A.)	15,707,407
Reconstruction Finance Corporation (F. L. A.)	16,022,500

CONTRACTS AWARDED APRIL 16 to MAY 15

Corps of Engineers (Army)

Wray Air Conditioning Corp. of Texas, Dallas, air-conditioning system, Barksdale Field, La., $4,898.

Edward Friedrich Sales Corp., San Antonio, refrigerators, $3,497.

Aqua Systems, Inc., New York City, gasoline fueling system, Ellington Field, $116,381.

Quartermaster Corps (Army)

Williamson-Dickie Mfg. Co., Fort Worth, 5,000 khaki cotton shirts, $8,750.

Williamson-Dickie Mfg. Co., Fort Worth, 14,944 khaki cotton trousers, $25,297.

The Hawk & Buck Co., Inc., Fort Worth, 258 pr. white trousers, $271.

Dickson-Jenkins Mfg. Co., Fort Worth, 425 pr. white trousers, $449.

Hicks-Hayward Co., El Paso, 2,754 pr. khaki cotton trousers, $3,211.

Sledge Mfg. Co., Tyler, 7,823 pr. trousers, $12,068.

Ordnance (Army)

Guiberson Diesel Engine Co., Dallas, tank tools and parts for light tanks, $41,095.

Emergency Ship Program (U. S. Maritime Commission)

Houston Shipbuilding Corp., Houston, 12 cargo carriers, $19,830,000.

Houston Shipbuilding Corp., Houston, 3 ways, $2,109,375.

Pennsylvania Shipyards, Inc., Beaumont, 3 ways, $2,109,375.

VIRGINIA

Value of Total Awards July 1, 1940 to May 15, 1941

Army Contracts	$106,159,809
Navy Contracts	741,833,126
Farm Security Admin. (Agr.) (Defense Housing)	324,800
W. P. A. Defense Projects (F. W. A.)	3,744,431
U. S. H. A. Defense Housing Projects (F. W. A.)	4,996,323
Public Buildings Admin. Def. Housing (F. W. A.)	3,634,000
Office of Education Defense Training (F. S. A.)	895,275
National Youth Administration (F. S. A.) (Defense Training Funds for 1941)	1,078,780
Reconstruction Finance Corporation (F. L. A.)	6,480

CONTRACTS AWARDED APRIL 16 TO MAY 15

Quartermaster Corps (Army)

Virginia Braid Co., Charlottesville, 100,000 yds. cap braid, $2,350.

Roanoke Mills, Inc., Roanoke, 30,000 sleeveless undershirts, $4,950.

Craddock-Terry Shoe Corp., Lynchburg, 93,750 prs. service shoes, $315,000.

Royal Silver Mfg. Co., Norfolk, 900 basting spoons, $1,890.

Corps of Engineers (Army)

Elmer S. Anderson, Boydton, lumber, Langley Field, $2,603.

Highway Machinery & Supply Co., Inc., Aurora, Illinois, grader with scarifier, Langley Field, $6,968.

The Henry Walke Co., Muncy, Pa., construction rope, plow-steel, Langley Field, $2,025.

Detroit Steel Products Co., Detroit, Mich., windows, casement steel, Langley Field, $7,277.

Ordnance (Army)

Pennsylvania Box & Lumber Co., Emporia, packing boxes, $4,167.

Medical Corps (Army)

Miller Mfg. Co., Inc., Richmond, bed trays, $9,690.

Yards & Docks (Navy)

Allis-Chalmers Mfg. Co., Milwaukee, Wisconsin, one 6000 kw. turbo-alternator and accessories at Navy Yard, Washington, D. C. and one

(*Continued on page 62*)

New Vultee Aircraft Plant

(*Continued from page 27*)

direct fixtures of 500 watts and 7 banks of transformers totaling 5,750 K.V.A. Service has sufficient capacity to consume 3,600,000 watts.

There are 90,000 linear feet of pipe in the sprinkler system, and the plant is served by a 16 inch water main with a reservoir of 2,000,000 gallons capacity being erected on adjacent property.

Celebrating the event *The Nashville Tennessean* issued a special "Wings of Defense" edition on May 4, which carried 206 standard newspaper pages devoted largely to aviation progress in Middle Tennessee.

In addressing the thousands present at the dedication, Wendell Willke asserted that "within 90 days, or at the most six months, the United States without even the assistance of the British production, will be turning out more arms, armaments and airplanes than Germany will be turning out."

He complimented the new Nashville plant of Vultee and declared "this plant compares favorably with all others I have seen. It reminds me very much of the British factories, both from a production and a safety setup."

Sir Henry Self termed the Vultee plant "a new unit added to that great arsenal of democracy which the President (Roosevelt) has assured shall come forth in all its power and strength."

In referring to the new Dive Bomber announced the night before the dedication ceremony Sir Henry Self expressed gratification that it would soon be in production and called attention to the significance of its name Vengeance. "By Vengeance," he said, "I do not mean any malicious spite, but rather that cold certainty of justice and retribution that overtakes any man or nation that violates those moral verities by which our world is governed."

Steps are being taken at Vultee to speed up employment to where 7,000 workers will be on the job by late summer.

Work is going forward on 800 dwellings as part of the Defense Housing Program exclusively for Vultee employees. In addition, a trailer village has been established, which now has 450 new trailers on the site, and temporary barracks are being provided for 200 men.

As Nashville has been declared a Defense Area private capital is planning to build houses for rent under liberalized provisions of the FHA and approximately 500 homes will be built under Title VI of the Act this summer.

The dedication of the Nashville plant of Vultee was much on the order of a great patriotic community celebration to which invitations were extended by Governor Prentice Cooper of Tennessee, Mayor Thomas L. Cummings of Nashville, and the Honorable Litton Hickman, County Judge of Davidson County, with the Chamber of Commerce making arrangements through a special committee headed by W. B. Hager, president of the Union Ice Cream Company.

Company officials present for the dedication were Victor Emanuel, president of Aviation Corporation, Harry Woodhead, chairman of the board of Vultee Aircraft, Inc., Richard W. Millar, president of Vultee, and Harvey C. Tafe, general manager of the Nashville plant.

T. Graham Hall, president of the Nashville Chamber of Commerce, and J. Percy Priest, member of Congress from the Fifth Congressional District in Tennessee, shared in the responsibility of master of ceremonies at the dedication.

Largest Electric Locomotives for Open-Pit Mining

At the East Pittsburgh Works of the Westinghouse Electric and Manufacturing Company there are now under construction nine of the largest electric locomotives ever built for open-pit mining. Each will be standard-gauge combination trolley-battery unit, will have continuous tractive force of 41,800 pounds, and will go into service late this summer or early fall at the Morenci, Arizona, open-pit copper mine of the Phelps-Dodge Corporation. When completed and in service, the nine 125-ton, 1520-horsepower locomotives are expected to handle 25,000 tons of copper ore each day, working 8-hour shifts.

National Defense Program Awards in the South

(*Continued from page 58*)

4000 kw. turbo-alternator and accessories at Naval Operating Base, Norfolk, ($263,522 arbitrarily apportioned), $105,409.

Westinghouse Electric & Mfg. Co., Washington, D. C., one condenser for 6000 kw. turbo-alternator at Navy Yard, Washington, D. C. and one condenser for 4000 kw. turbo-alternator at Naval Operating Base, Norfolk ($41,293 arbitrarily apportioned), $16,517.

Harnischfeger Corp., Milwaukee, Wisc., three bridge cranes at Navy Yard, Norfolk, (Portsmouth), $83,750.

Shaw-Box Crane & Hoist Division Manning, Maxwell & Moore, Inc., Muskegon, Michigan, seven bridge cranes at Norfolk Navy Yard, Portsmouth, $86,240.

Supplies & Accounts (Navy)

Taylor-Parker, Inc., Norfolk, two man, hand and hack cross cut saws, $21,940.

Charlottesville Woolen Mills, Charlottesville, dark blue flannel, $202,700.

Southern Welding & Machine Co., Charlottesville, steel stuffing tubes, $254,090.

Southern Oxygen Co., Inc., Arlington, acetylene, in cylinders, $9,014.

Taylor-Parker Co., Inc., Norfolk, carbon steel countersinks & reamers, $12,831.

WEST VIRGINIA

Value of Total Awards July 1, 1940 to May 15, 1941

Army Contracts	$28,865,769
Navy Contracts	51,978,352
W. P. A. Defense Projects (F. W. A.)	285,082
Office of Education Defense Training (F. S. A.)	1,199,684
National Youth Administration (F. S. A.) (Defense Training Funds for 1941)	754,558
Reconstruction Finance Corporation (F. L. A.)	44,890

CONTRACTS AWARDED APRIL 16 TO MAY 15

Ordnance (Army)

Consolidated Expended Metal Companies, Wheeling, steel ladders, $5,451.

International Nickel Co., Inc., Huntington, forgings, $6,190.

West Virginia Rail Co., Huntington, equipment, $1,300.

Supplies & Accounts (Navy)

The Consolidated Expanded Metal Co., Wheeling, expanded metal, $44,594.

The Anchor Lumber Co., Parkersburg, white oak domestic timber, $14,226.

Porcelain Products, Inc., Parkersburg, insulators, $29,033.

Union Insulating Co., Parkersburg, receptacle plugs & lamp sockets with molds, $220,085.

Signal Corps (Army)

Jeffrey-Dewitt Insulator Corp., Kenova, porcelain insulators, $825.

GAR WOOOD LOAD-PACKER—

Bulletin No. 27—illustrating and describing the Gar Wood Load-Packer for cleaner and healthier municipalities, offering a new, fast, sanitary and economical way to collect and haul garbage and rubbish.

Gar Wood Industries, Inc., Hoist and Body Division, Detroit, Mich.

low-cost merchandising to management executives

This is a suggestion to sellers of raw materials, factory or office equipment, insurance, building construction—anything management executives buy.

$ $ $ You can get more out of your advertising investment in publications they read at home—more out of your salesmen's calls—by *merchandising* your story in offices.

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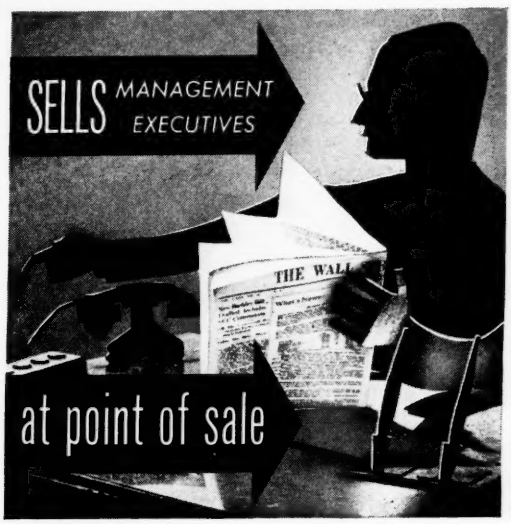
$ $ $ Leading national executive-publications are 39 to 88 per cent home-read—with one exception, The Wall Street Journal. *As many as 86 per cent of its subscribers read it in their offices at their desks.*

$ $ $ On top of that, The Wall Street Journal is the world's most economical way of reaching active management-executives of companies with assets of over $1,000,000.

WALL STREET JOURNAL



Tung Oil Remains Industry's Best Drying Oil

(Continued from page 35)

time they start, usually around January, until the milling season is over along in the spring. So from an industrial standpoint it would require a great many more mills and considerably more help to produce as much oil as we now import.

One of the problems that has bothered us in the processing part of this industry has been getting the fruit dry enough to hull and mill efficiently and economically. When the tung fruit drops from the tree in the fall it contains considerable moisture. This must be dried out in some way before the fruit can be satisfactorily milled. The moisture range at milling time runs from about 13 to 24 per cent of the weight of the fruit with 13 per cent being the most satisfactory figure under present milling conditions. In other words, you can't get as much oil when the fruit contains excessive moisture as you can when it is properly dried.

Dr. R. S. McKinney, in charge of the chemical laboratory at Gainesville, Florida, has worked out an electrical device that determines the moisture content of tung fruit quickly and reasonably well. It is being used at a number of mills this season. Mr. A. F. Freeman, our chemist at the Bogalusa, Louisiana, Laboratory has adapted a commercial moisture measuring device which determines adequately for mill control purposes the amount of moisture that is left in the press cake after the meal has been pressed, as well as moisture in material in all phases of milling. Both of these findings are important.

There is another problem that is getting considerable attention. The present method of getting oil from tung fruit is to hull the fruit, and then press the oil from the kernels. This method leaves about 5 per cent of the oil in the cake. That's too much waste so we are trying other methods of getting the oil. A solvent extraction process on a pilot plant scale has been rather promising thus far. This semi-commercial plant is located on the grounds of the Crosby Naval Stores plant at Picayune, Mississippi. Mr. Freeman, who is operating this plant, has run many large batches of tung press cake and also the ground kernels through it. He has been able to get more than 99 per cent of the total oil available by using this new solvent method in conjunction with the expeller process, as compared with about 95 per cent or less obtained with the present expeller methods alone. That's quite a difference, but more work is needed before we can say definitely whether we should abandon the expeller method and adopt the solvent extraction method.

Several procedures of drying tung fruit in preparation for milling are being tried out at different centers in the tung belt. One method utilizes a slatted shed with screen wire around the sides and bottom so that air can flow freely through the piled fruit. Another method utilizes a mechanical dryer that forces hot air from steam pipes up through the stored fruit. And still another method utilizes a building with a perforated floor about 3 feet above the ground and an open lattice ventilator at the top. This allows the air to flow in at the bottom, pass up through the stored fruit and out the ventilator at the top.

Then there's another idea. Some of the producers feel that the fruit might possibly be hulled on the farm where it is produced by using a hand huller somewhat like a corn sheller. Our chemists and engineers are working on that angle. They will also attempt this hulling by using an English walnut huller. This problem may be solved either by modifying one of these machines or by a preliminary treatment of the tung fruit containing the proper amount of moisture before hulling.

The hull of the tung fruit is practically a waste product at present. It has some little value as a fertilizer, and that's about all. One or two mills are using the hulls to fire the boilers. The press cake has considerable value as a fertilizer, but we're still searching for a more profitable use for this material which contains something that is toxic to animals. The protein content is fairly high and if a method of detoxifying the cake can be found it could be used for livestock feed. Research, we hope, will help us solve this and other problems in the rapidly expanding tung oil industry.

SIMPLIFIED DISBURSEMENT— Booklet—"Disbursement Procedure Simplified," a revision of "Modern Accounts Payable"; publication contains 10 pages and is illustrated with charts and line drawings, reducing to its fundamental principles the routine of purchasing supplies and paying for them, and is said to form an especially useful guide to new businesses; booklet is now ready for general distribution, according to George W. Lee, head of the Todd Company's Commercial Check Sales Department.
The Todd Company, Inc., Rochester, N. Y.

FALK AIRFLEX COUPLINGS— Bulletin No. 8100—illustrating and describing outstanding features of five types of Falk Airflex Couplings.
The Falk Corporation, Milwaukee, Wis.